



Networking with modems

Inside ©opy Protection

Rs 100 Subscriber Copy NOT FOR SALE

September 2002

www.thinkdigit.com

digit

>> Your Technology Navigator

SOUND DECISIONS

TESTED: 29 Speakers 8 Soundcards 6 MP3 Players



Build your own
Home Theatre System



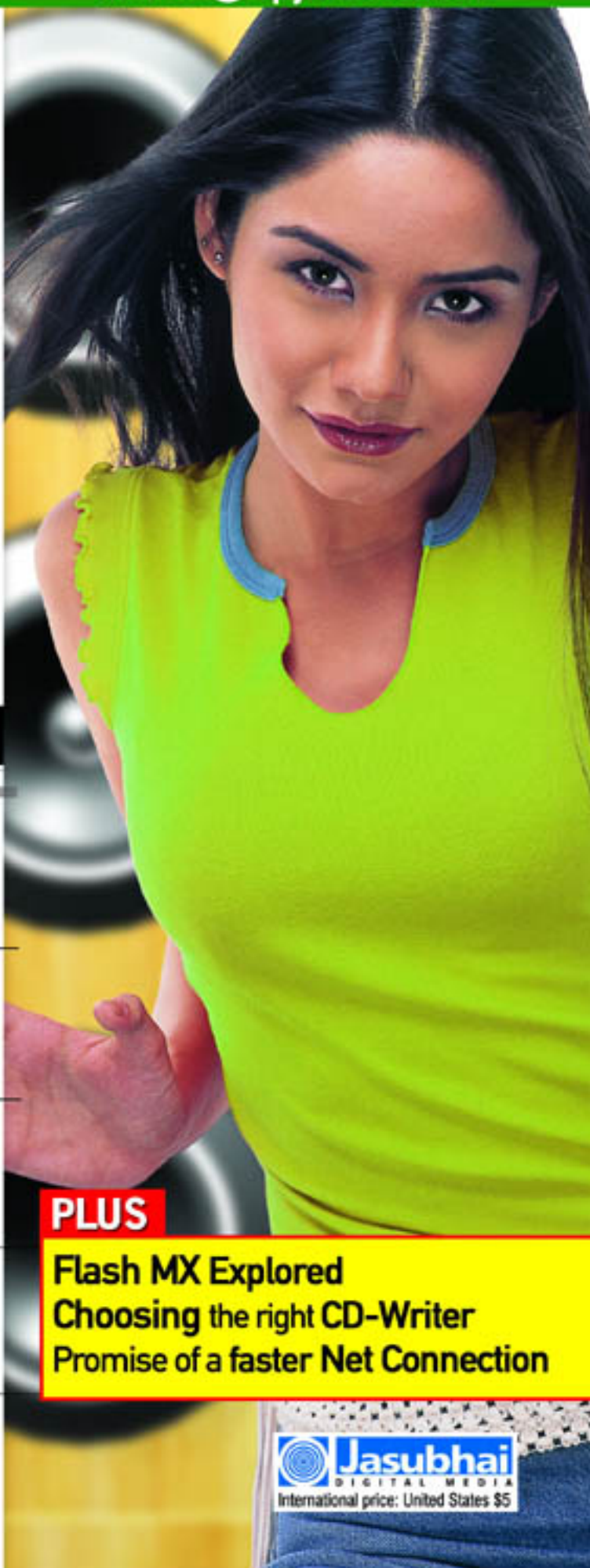
25 TIPS for **Working Smart**

Spam, Banners, Popups, Viruses...
 **KILL'em all!**



Technology and YOU
No getting away from IT

 The **BIG GUNS** of gaming 



PLUS

Flash MX Explored
Choosing the right CD-Writer
Promise of a faster Net Connection

 **Jasubhai**
DIGITAL MEDIA
International price: United States \$5

Helping Hands

Schools in the US spend more than Rs 25,000 crore annually on technology. Now consider this: Most government schools in India don't even have a clear-cut computer education programme. The obvious question that then comes to mind is: How do we overcome this digital divide?

Global tech giants are spending crores of rupees to educate teachers on technology and provide computer equipment in schools. In fact, the US Department of Education has gone so far as to commission a Rs 50 crore study to research the impact of technology in education. This is possible because schools in the West have all the pieces of infrastructure in place: they have the computers, the connectivity, trained staff and the content.

But the situation is quite different in India. Most schools don't even have basic computing infrastructure to impart computer literacy, let alone use technology as a tool to aid education. Couple this with the fact that not everyone can afford to pay thousands of rupees to a computer training institute and only a small fraction of us actually have access to a PC, and we've got a serious problem.

With computer literacy being a pre-requisite in today's age, it's obvious that we need some sweeping changes to ensure that this digital divide doesn't make our children start life with a disadvantage.

Companies like Intel are making attempts to bridge this gap with their Rs 500 crore 'Teach to the Future' programme, which aims at imparting technology education to 5,00,000 teachers globally. Even though there's a humanitarian angle to all these programmes, these tech companies realise that they need to do this in order to seed their own future.

We too can play an important part in bridging this gap.

Every year we junk thousands of PCs without realising that there might be an educational institution in our neighbourhood that might have tremendous use for our discarded technology. After all, one person's obsolete technology might be another's future meal ticket.

Companies can get in touch with schools and donate their old PCs to help underprivileged children in coming to grips with computers. We can organise charity drives to ensure that every school in our locality has access to computers. The government can offer tax rebates to urge larger companies into donating old PCs. Not-for-profit organisations can be set up to manage collection, refurbishment and grants of donated PCs.

So what if we can't provide the latest and the greatest technology to our schoolchildren? We can at least ensure that they're literate enough to compete in the same race as the rest of the world.



vinit_aggarwal@jasubhai.com

Note: We at Digit are committed to help bridge this digital divide. Schools and educational institutions that wish to receive technology donations, as well as companies willing to donate their old PCs can write to us and we'll do our best in getting them in touch with each other.



Vinit Aggarwal
Assistant Editor

“With computer literacy being a pre-requisite in today's age, it's obvious that we need some sweeping changes to ensure that this digital divide doesn't make our children start life with a disadvantage”

FEATURES

The Net's Last Mile.....32

No more slow connections! Check out what's in the pipeline to drive away your bandwidth blues

IT's Everywhere.....38

Technology influences every facet of our lives, be it the way we work or the way we live... at all times, at all places

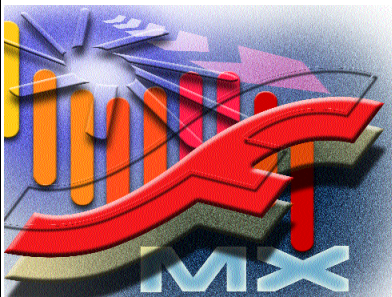
TEST DRIVE

Unbound Sound.....46

The best speakers, soundcards and MP3 players your money can buy

Flashing Bright80

Find out what's new in Flash MX and how you can use it



INSIGHT

To Stop a Thief.....88

Copy-protected CDs and DVDs are already out in the UK and the US. Find out why that matters

The Entertainers91

The best software for experiencing high-quality movies and music on your PC

Bring out the Popcorn!.....94

You don't have to dig too deep in your wallet to construct your own PC-based home theatre system

Net Nasties.....98

Some of the nastiest irritants on the Internet. Can we just spray them away?

Connect sans Net102

Set up your own friendly neighbourhood network using modems

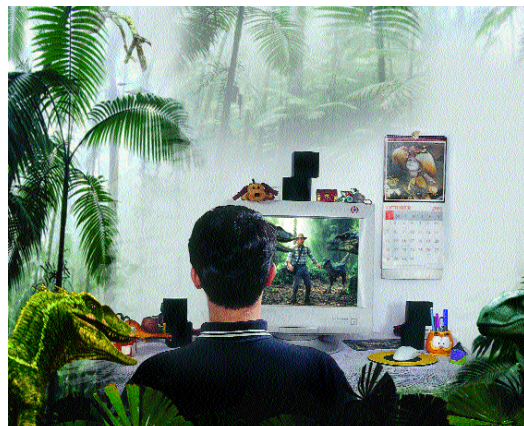
Smart@work.....109

25 ways to help you do your job more efficiently and productively

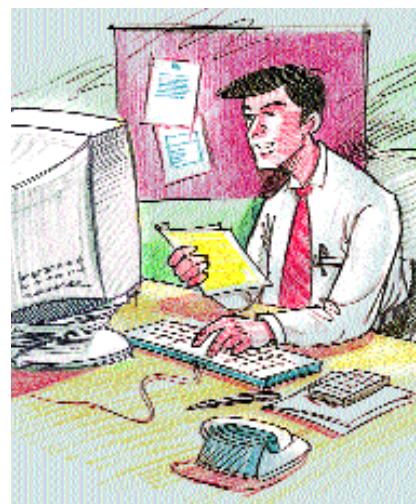
ARCADE

Top Guns122

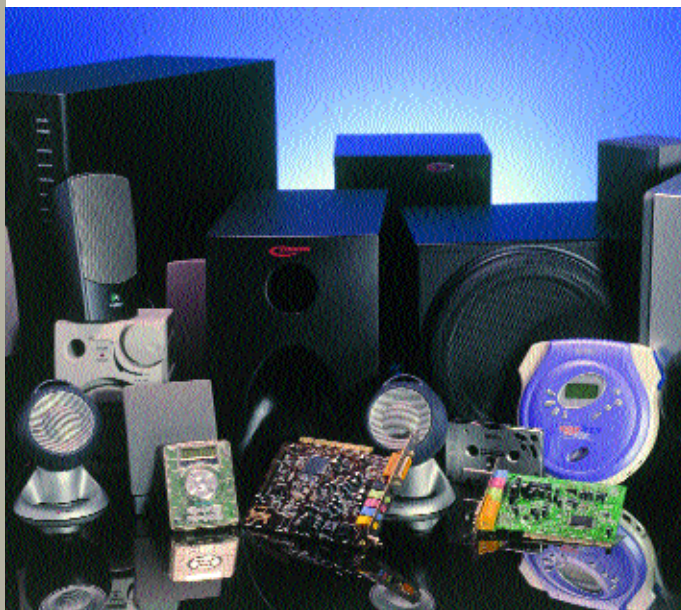
We showcase the biggest and baddest guns that have ever graced games



▲ 94 Theatre on your desktop—for less than Rs 10,000



▲ 109 Don't work hard, work smart with your computer



▲ 46 An audio bliss awaits you: all you need is the right hardware

122 ▶

The deadliest guns that we've ever witnessed in games



102

Connect to your friend's computer using just modems!

88

Piracy: The music and film industries fight back

46

Do you have the right sound solution?

94

A movie theatre experience...at home!

98

10 things we all hate about the Net and how to fix them

109

Make the PC your ally—secrets to working smart

38

A look at how technology has changed everyday life

122

Our pick of the most impressive weapons from first person shooters

Reviewed this month

REGULARS

NEWS FEED	20
LETTERS	30
DROOLMAAL	36
START UP	44
BAZAAR	83
UNDERCOVER	87
Q & A	104
TACTICS	125
OFF THE SHELF	126
DIGIT DIARY	128
BACKBYTE	130

To subscribe to Digit, fill out the subscription form available online at www.thinkdigit.com/subscribe

HARDWARE

Bazaar 83

- ACI Emerald notebook
- Brother P-Touch 2300 label printer
- Epson Perfection 2450 Photo scanner
- Intel Celeron 1.7 GHz
- Intel D845GBV motherboard
- LITEON CD-ReWriter 40x12x48x
- Mercury 3-in-1 PenCam
- MSI 845E Max2-BLR motherboard

2.1 Speakers 48

- Artis S100
- Artis S320
- Artis S400
- Creative Inspire 2.1 2400
- Frontech JIL 2002
- Labtec Pulse 325
- Labtec Pulse 424
- Mercury 880
- Mercury SW-480

- Mercury SW-980
- Sumoku Alpha - 4R
- Sumoku Alpha - 5
- Sumoku Alpha - 6
- Typhoon DS1032
- Typhoon Superwoofer
- 4.1 Speakers 48
- Artis S800
- Artis S880
- Creative Inspire 4.1 4400
- Frontech JIL 1855
- Labtec Arena 530
- Logitech Soundman Xtrusio DSR 100
- Mercury SW 1980
- Sumoku Alpha - 7
- Typhoon 5D
- Typhoon Acoustic 4.1

5.1 Speakers 48

- Artis S5100
- Artis X8 5.1
- Mercury SR-301 F
- Typhoon Acoustic 5.1
- Soundcards 64
- Creative Audigy Platinum

- Creative Sound Blaster Extigy
- Creative Sound Blaster Live! Value
- Creative Sound Blaster Live! DE 5.1
- Creative Vibra 128
- Intel 845GBV
- MSI 845 MAX2 BLR
- Zoltrix Nightingale PRO 6

MP3 Players 72

- Creative DAP-CD0001
- Creative PA-20
- D-Link DMP-100
- M-ANY DAH200S
- NAPA DAV316
- Philips eXp401

SOFTWARE

Bazaar 83

- Cakewalk Club Tracks
- Microsoft Project Professional 2002
- Stellar Phoenix
- Sun StarOffice 6.0

Flash MX 80

ON THE CD

digit
interactive

HIGHLIGHTS

MUSICMATCH Jukebox 7.2

Size: 8.9 MB, Type: Trial
Mindware\Software\Multimedia

Assimilation

Size: 7 MB, Type: Demo
Playware\FunZone

Babylon-Pro 3.2.46

Size: 6.9 MB, Type: Shareware
Mindware\Software\Home

Download Accelerator Plus 5.3

Size: 1.67 MB, Type: Freeware
Mindware\Software\Internet

Auryn Quest

Size: 99.1 MB, Type: Demo
Playware\Arena\Games

PowerZip 6.01

Size: 1.65 MB, Type: Trial
Mindware\Software\System

Flashdown 1.2

Size: 682 KB, Type: Shareware
Mindware\Software\Internet

IrfanView 3.75

Size: 812 KB, Type: Freeware
Mindware\Software\Multimedia

AudioCatalyst 2.1

Size: 2.8 MB, Type: Shareware
Mindware\Software\Multimedia

NetCaptor 7.0.1

Size: 836 KB, Type: Trial
Mindware\Software\Internet

CloneCD 4.0

Size: 2.13 MB, Type: Shareware
Mindware\Software\System

**Free PC to
Phone Dialer**

brought to you by:

**PHONEWALA
COM**

Droolmaal Sponsored by:

PROFX

Drool of the month

KNOW YOUR CD

MINDWARE\CONNECT

The *Connect* section on your Digit CD brings you some fun reading with *Bookmarks* and *Newsletters*. *Bookmarks* contains a list of sites on a particular subject along with a detailed description of the sites. You can browse each site by simply clicking the Web site link. This month we bring you some cool sites on



Indian and International cinema. The *Newsletters* section, of course, brings you a collection of newsletters on different topics every month. This month we have some of the coolest

comic strips delivered straight to your inbox.

So if it's some light reading that you're looking for, then this is one section that you would

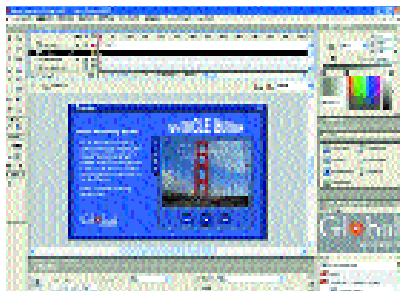
definitely want to browse.



MUST-TRY SOFTWARE

Macromedia Flash MX

Flash is a software that needs no introduction. It has for long been a favourite



among developers and designers alike when it comes to developing dynamic multimedia content for Web sites, online advertising and more. Flash MX now includes video support for MPEG, Digital Video, MOV, and AVI formats. You can edit, manipulate and animate video objects or use scripting to make your videos interactive. You'll also find new

graphic design capabilities such as Bezier curves, transformation tools and pixel-level snap control. In addition, Flash's ActionScript environment has undergone significant improvement. For a full review, see page 80.

Size: 46 MB, Type: Shareware
Mindware\Software\Multimedia

Windows Commander 5.0

Windows Commander is a replacement for File Manager and Explorer in Windows. The program handles archives and lets you easily copy files to and from them. It also features renaming and deleting of entire trees, drag-and-drop support, a launch utility that lets you place frequently used programs into a drop down menu, etc. This new version has support for Windows XP themes, background download manager, and more.

Size: 1.29 MB MB, Type: Shareware
Mindware\Software\System

Duke Nukem: Manhattan Project

Duke Nukem is raising hell again—this time in New York City! Help the Duke battle his way across towering skyscraper rooftops and through subway stations as he hunts down Mech Morphix. You'll have to take on mutants of every kind as you fight your way through eight huge environments.

Size: 50.3 MB, Type: Demo
Playware\Arena\Games



www.thinkdigit.com



taste technology at <http://www.thinkdigit.com>

WEB SPECIAL



Icons for a Generation

From chubby Pac-Man to lissome Lara Croft, characters in computer games have, over the years, evolved into icons transcending the game screen...

FEEDBACK

Have an opinion? Want to share some thoughts with us? Got an idea to make your magazine better? Just fill in your name, e-mail address and thoughts and we'll surely read it.

BY DEMAND



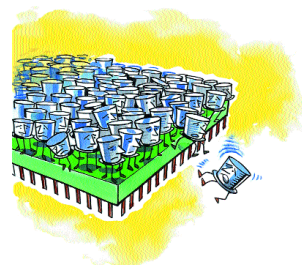
You get to choose what goes on Digit Interactive. This month, you have chosen:

America's Army Operations
(218 MB) for Playware
Sun ONE Studio 4, Community Edition with J2SE 1.4
(84 MB) for Mindware
Expect these on the October 2002 CDs.

WEB SPECIAL

Moore's Last Sigh

Moore's Law, which states that the number of transistors on a chip doubles every 18 months, held true for 35 years. However, the latest trends indicate that the 'law' is ready to be broken.



VOLUME 2, ISSUE 9

Chairman and Publisher
Jasu Shah
Associate Publisher and
Editor Maulik Jasubhai
Assistant Editor Vinit Aggarwal

Editorial

Head-Writers Marco D'Souza
Writers Veer Kothari, Sriram Sharma,
Ahmed Shaikh
Features Editor Sveta Basraon
Copy Editor Mitali Parekh

Design

Art Director Marshall Mascarenhas
Manager-Design Swaroop Biswas
Designers Shivasankaran C. Pillai,
Shyam Shirsekar, Jaya Shetty, Ram,
Neeta Wadiker, Solomon Lewis,
Ashwin Boricha, Mahesh Benkar,
Photographers Mexy Xavier,
Jiten Gandhi

Test Centre

Head Hakim Badshah
Deputy Head Hatim Kantawalla
Reviewers Aliasgar Pardawala,
Yatish Suvarna, Mitul Mehta,
Ashu Mehrotra
Co-ordinator Gautami V. Chalke

Multimedia

Co-ordinator V. Ravi Shankar
Design Kabir Malkani, Jo-Ann Rodricks,
Hemant Charya, Priyamvada K.K.,
Liu Ai Chin
CD Content Julian Vongeyer

Media Studio

Bimal Unnikrishnan, Priya Ramanathan,
Afzal Mazgaonkar, Prasanth Uyyul

Production

GM Shivshankar Hiremath

Circulation & Logistics

Adarsh Kaul

Marketing & Sales

Head Sales Louis D'Mello
Deputy Head Sales Vijay Adhikari
Marketing Manager Bhavesh Thakor
Manager Consumer Mktg Nabjeet
Ganguli
Customer Service Namita Shetty

Head Office: Editorial, Marketing & Customer Service

Plot No D-222/2, TTC Industrial Area,
MIDC, Shirvane, Nerul,
Navi Mumbai 400 706
Phone: +91 022-7629191/9200
Fax: +91 022-7629164
Printed and published by Jasu R. Shah
on behalf of Jasubhai Digital Media Pvt
Ltd, 26 Maker Chambers VI, 2nd Floor,
Nariman Point, Mumbai 400 021, India.
Editor: Maulik Jasubhai
Printed at Tata Infomedia Limited,
Prabhadevi, Mumbai 400 025

Cover Photograph Umesh Aher
Model Raksha Kapoor



Write Back

Got feedback on Digit or
www.thinkdigit.com? Have something to say
about an article we published?
We'd love to hear from you. Send us your
rants and raves at
readersletters@jasubhai.com

Product Testing

Want your product reviewed by Digit?
Contact our Test Centre at
testcentre@jasubhai.com



Software on CD

To submit software for inclusion in the Digit
Interactive CDs, contact us at
cdcontent@jasubhai.com

Help!

Complain about your missing copy?
Cover CD not working properly?
Renew your subscription
Report a change in mailing address
Order a back issue
Need assistance on any of these?
Contact Customer Service at
022-7629200 Extn: 1013-1016
help@jasubhai.com



Endorsements/Reprints

The Best Performance and Best Value Awards
are the undisputed stamp of excellence for
technology products in India. If you are a
winner and are interested in ordering article reprints or using
our logos, contact
vinith_shetty@jasubhai.com

ADVERTISERS' INDEX

CLIENT	PAGE
Amkette	23
Asus	49,51,53,55
AT&T	Inside Front Cover
Britannia	13
Business World	27
DBS	39
Dell	14,15
IBM	18,19
Intel	10,11
Invensys	Back Cover
lomega	73,75
Jungsoft	29
Kobian	17,63,79,97
LG	109,110,111,112,113, 114,115,116
MSI	25
Onkyo	95
Panasonic	21
Pro FX	36,37
Samsung	5,7,9
Seagate	45
Torvin Speakers	57
Verbatim	93
Warcraft	71
ZDNetIndia.com	Inside Back Cover
Zenith	33

Digit Promise to our readers

While every effort is made to ensure that the information and prices provided are correct, there may be some variation due to differences in local taxes across states. Please keep this in mind before affecting any product purchase.

To Advertise

CONTACT OUR BRANCH OFFICES

BANGALORE

S. Saikumar
Phone: 5325670/88, 2899287
E-mail: s_saikumar@jasubhai.com

CHENNAI

Jayesh George
Phone: 8235186-89
E-mail: jayesh_george@jasubhai.com

KOLKATA

Jayanta Bhattacharya

Phone: 2345100/5200

E-mail: jayanta_bhattacharya@jasubhai.com

MUMBAI

Rupesh Sreedharan
Phone: 6591849-50, 6591651

E-mail: rupesh_sreedharan@jasubhai.com

NEW DELHI

Rajesh Arora
Phone: 6445320-25

E-mail: rajesh_arora@jasubhai.com

PUNE

Vinayak Inamdar
Phone: 4482059, 4494572

E-mail: vinayak_inamdar@jasubhai.com

SECUNDERABAD

S. Venu
Phone: 6329190, 6329181
E-mail: s_venu@jasubhai.com

hypothesis

Palladium**■ What is it?**

Microsoft's ambitious plan to change the architecture of PCs in order to address concerns relating to security, privacy and intellectual property.

■ How does it work?

Microsoft is hoping to add these features to future versions of the PC with a combination of hardware and software. Basically, Palladium is about deciding what's trustworthy. It not only lets your computer know that you're you, but can also limit what runs on your computer. The system uses high-level encryption to lock data and can also protect the integrity of documents so that they can't be altered without your knowledge. Even the link between the keyboard and computer can be encrypted!

■ What does it mean to me?

Palladium is touted as the complete security and privacy solution. It tells you who you're interfacing with or who's using your PC and what they're doing, protects information from unauthorised access and modification, stops viruses and prevents spam. Your information can be transferred to other systems (say, a bank) by an 'agent'—even the agent can't read the information, it only carries it. It's currently being offered to record studios to control media piracy.

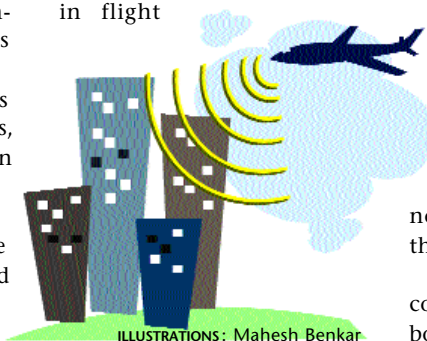
Solar plane for 3G

A California-based technology company, SkyTower, is planning to launch crewless solar-powered airplanes that will provide entire cities with broadband Internet access and 3G mobile services from 70,000 feet above the ground. SkyTower is working with NASA and the Japanese Ministry of Telecommunications on this project.

Tests show that SkyTower's planes, called Pathfinder-Plus, could complement and, in some cases, supersede satellite and terrestrial telecommunications systems. Because the signal is being transmitted from directly or almost directly above, the SkyTower sys-

tem will cover areas that cannot receive satellite or terrestrial signals due to obstructions such as large buildings.

The upper wing of the Pathfinder-Plus plane is made of solar panels, which generate the energy for the aircraft to remain in flight



ILLUSTRATIONS: Mahesh Benkar

throughout the day. The plane must land at night, but SkyTower is trying to create fuel cells that would store enough energy to allow the plane to stay circling a city overnight. Such fuel cells could enable an airplane to stay in the air for up to six months at a time. The extremely tight turning circle of the Pathfinder-Plus means that the plane stays within a small area throughout its flight, so people on the ground will not have to keep moving their receivers to track it.

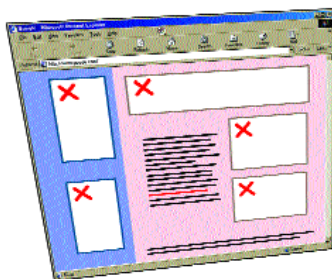
SkyTower is confident of a commercial launch of the airborne services in 2005.

Have JPEG, will pay

The ISO standards body will take the unprecedented step of withdrawing the JPEG image format as a formal standard if Forgent Networks, a small Texan company, continues to demand royalties on a very old patent. According to Richard Clark, JPEG committee member, under the ISO terms, only a standard that can be implemented for

free or on Reasonable and non-discriminatory (RAND) terms can be allowed. It is clear that Forgent's claims are not RAND compliant. "However, ISO itself cannot formally take a stance on the patent," Clark added. Unlike MPEG, there is no licensing structure for JPEG.

The current assumption is that the patent is not valid. Since the patent becomes invalid in 2004 (under the old rules, 17 years after filing the patent) there is little incentive for manufacturers to bow to the terms, though Forgent declined to rule out litigation against those who decline to pay them royalties on the claim.



A new XP

The upcoming version of Windows XP, named Windows XP Media Center Edition, aims to make the PC a permanent part of home entertainment.

It will enable users to use a TV remote control to catalogue songs, videos and pictures, as well as check TV listings. However, users will need a new system to run it on. Hewlett-Packard and Samsung are among the computer manufacturers developing Windows Media Center PCs and prices are estimated between \$1,000 and \$2,000.



Hollywood invading your PC?

In one of the boldest political efforts yet, movie studios have drawn up a bill to disrupt peer-to-peer networks to curb piracy. The bill permits copyright holders to perform nearly unchecked electronic hacking if they have a 'reasonable basis' to suspect piracy. In effect, this would immunise groups such as the Motion Picture Association of America (MPAA) and the Recording Industry Association of

America (RIAA) from all state and federal laws if they disable or block a peer-to-peer network. Anyone whose computer gets damaged in the process, must receive permis-

sion from the US Attorney General before filing a lawsuit, and the suit can be filed only if the actual monetary loss was more than \$250.

Concerns have been raised over the fact that unless you can show economic harm, you can't even be compensated. Even if you want to be compensated, you have to jump through procedural hoops. The MPAA however asserts that law-abiding Internet users should have no reason to be concerned.



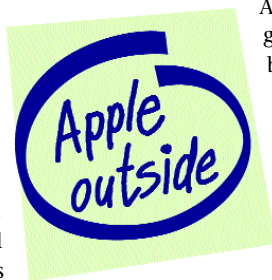
Apple may switch to Intel

Andrew Neff, an analyst with the US-based investment banking firm, Bear Stearns, predicts that Apple will shift to Intel chips. Apple currently uses the PowerPC chips from Motorola and IBM that max out at 1 GHz. Intel already has chips

running at 2.5 GHz, with 3 GHz due later this year. This move will give Apple's computers a great performance boost and in turn gain more customers.

When Steve Jobs was asked if Apple would consider a move from the Power-

PC architecture, he had replied, "...we like to have options." While Wall Street analysts have created a cottage industry out of making grandiose predictions and recommendations, Neff can boast of a fairly strong track record. In January 2001, he said that HP should purchase Compaq—months later HP announced it was buying Compaq.



redalert

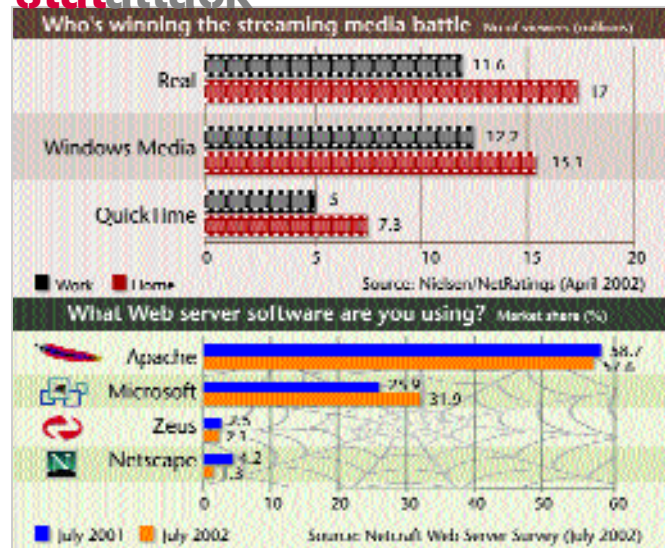
Trojan in encryption program

A Trojan horse turned OpenSSH, the *de facto* standard for network security, into a convenient back door. OpenSSH encrypts the link between two computers to prevent eavesdroppers from capturing messages as they are sent across the network. In the infected release, the Trojan attempts to communicate with other computers on the Internet and awaits further commands, giving complete control to potential hackers. How the Trojan was sneaked in as part of the update is unknown. The fake release has been replaced with one without the Trojan.

PHP vulnerable

The PHP form-data post handler is susceptible to a malicious post request that can trigger an error condition which, depending on the hardware, can crash the machine or provide access for remote exploitation. On an Intel x86 machine an attacker has no control over memory allocation and can only cause a Denial of Service (DoS), but on a Solaris machine, a hacker would be able to free chunks of memory and overwrite them arbitrarily to run code. PHP versions 4.2.0 and 4.2.1 are vulnerable. A fixed version as well as patches have been released to rectify the problem.

statattack



INFOGRAPHICS: Jaya Shetty

Two heads are better

Japanese company Scarabs has designed a two-headed hard drive that consists of a read/write head and a second read-only head to provide higher security. The latter will be connected to the Web server, while the former connects to the PC used to update the Web site. Both are completely independent, making it impossible for people viewing the site to hack it. It also means that the Web site can be updated without interrupting surfers, as changes can be made using the read/write head.

snapshot

Overall IT spending
in 2002:
\$981 billion

Source: IDC

■ Throwaway mobiles set to debut in US stores ■ China to break foreign monopoly with own Windows OS ■ Princeton allegedly hacks Yale admissions site

followup

Pay with your thumb!

A practical application of the Sense and Sensibility story carried in the July 2002 issue is seen in Texas where three Kroger stores are testing biometric systems that enable shoppers to pay with their thumbprint. Customers register with a store by placing their thumb on an electronic screen that records the print. The information is encrypted and linked to the customer's credit card, debit card or checking account information. A picture ID establishes the shop-



per's identity and the whole process takes just 20 seconds! Though more technology-savvy people were expected to be most interested, everyone from teenagers to the elderly are sign-

ing up. Grocers say that controlling fraud was their main goal—credit and debit card fraud cost grocery chains an average of \$1,96,000 each in 2000. Though the feedback is positive, reports show a fear of government and law surveillance. Kroger employees remind shoppers that the system is based on the thumbprint rather than the index finger that is standard in law enforcement. Also, they don't store the entire thumbprint, just crucial characteristics.

Microsoft to reveal Windows code

Microsoft Corporation will reveal hundreds of pieces of proprietary code from its Windows operating system to comply with an antitrust settlement it signed in November 2001 with the US Justice Department. It will disclose 385 modules of internal operating rules, previously kept secret. The Justice Department and 18 states had accused Microsoft of deliberately withholding computer code in Windows to hamper competitors. Microsoft reached a settlement and nine states agreed to sign, but nine others are still asking US District Judge Colleen Kollar-Kotelly for tougher restrictions.

snapshot

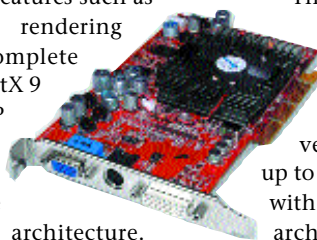
Dataquest predicts
1 GB memory for
entry-level PCs by
2005

Source: Dataquest

Graphics at the speed of light

ATI Technologies Inc has introduced the RADEON 9700 Visual Processing Unit (VPU), a groundbreaking chip that boasts of features such as eight parallel rendering pipelines, complete Microsoft DirectX 9 support, AGP 8x support and a fully programmable floating-point architecture. The chip's eight parallel rendering pipelines provide the brute force to process over 2.5 billion pixels per second. The four parallel geometry engines process greater than 300 million transformed and lit polygons per second. In addition, Hyper Z III reduces overdraw by detecting and discarding hidden pixels and reduces memory bandwidth consumption by over 50 per cent. It incorporates a new high-performance 256-bit DDR memory interface, providing over 20 Gbps of graphics memory bandwidth and fully supports the AGP 8x specification, allowing increased volumes of texture and vertex data to be transferred quickly.

The AGP 8x interface was designed to double the graphics processing bandwidth over today's AGP 4x.



The chip supports up to 16 textures per rendering pass with Pixel Shaders 2.0 and vertex programs of up to 1,024 instructions with flow control. This architecture enables users to run complex cinematic-quality shader programs in real time for truly realistic effects. SmoothVision 2.0 incorporates a full-scene anti-aliasing implementation for unprecedented performance at even the highest quality anti-aliasing modes. Also included is ATI's popular advanced anisotropic filtering technology, supporting up to 16 bilinear or trilinear samples per pixel in a variety of modes. These technologies substantially improve the visual quality, without degrading performance. ATI's retail product will ship with 128 MB DDR memory, at a suggested retail price of \$399 (approx Rs 20,000).



heroes

Open Source

nVidia will make its Cg development tools for programming high-level graphics effects open-source software. RealNetworks too plans to publicly release the code underlying its multimedia player software, though certain details may change before its release.

Adult entertainment

The US adult Web site industry has set up a trade organisation to represent it. The Internet Freedom Association (IFA) aims to promote the rights of the online adult entertainment industry, while taking a strong stand against child pornography.



zeroes

Privacy

Japan launched a compulsory government ID system in the face of stiff protests calling it a violation of privacy. The database stores names, addresses, dates of birth, gender and the new ID numbers for each of Japan's 127 million citizens, making it easier for them to obtain documents for a variety of public services and benefits.

Piracy

Federal prosecutors charged Canadian Robert Garby with selling of illegal mod chips and pirated console games through his Kustom Komputers business. He pleaded guilty to six counts of criminal code violations and copyright law infringement and was fined \$17,000 and sentenced to a year of probation.

Dreamcast, the hackers choice

Selling for around \$75 (approx Rs 3,700) with an Ethernet port, the Sega Dreamcast is currently the choice game console for information warfare as demonstrated at the Black Hat conference in Las Vegas held on July 31, 2002. As one example, the console has been converted into a bug that can be dropped into a corporate network with little or no detection.

Aaron Higbee of Foundation and Chris Davis of Red-Siren have developed a Linux toolkit that runs on the system, and when hooked up to a network, dials into the hacker's network. Known as the DC

Phone Home kit, the software checks all available services such as HTTP, SMTP and SSH in a bid to make an outbound connection. It even checks for proxy servers hooked up to the network. Though the kit could be used on a range of hardware quite easily, the Dreamcast was chosen due to its innocuous nature. According to a report from SecurityFocus, during their presentation at Black Hat, when performing penetration tests, they often

found themselves able to get physical access to the target's facilities for a few minutes.

As a defence against such attacks, Higbee and Davis suggested allowing only network connections from pre-assigned MAC addresses, along with the obvious tightening up on physical security. Other hardware that could be used in the phone home attack includes software for the Compaq iPAQ and a bootable x86 CD-ROM which can perform the attack using any available PC.



Toyota's driving companion

It smiles when you approach, opens its doors and rotates a seat towards you. It observes you in your house to study your music and TV preferences. The Toyota p.o.d (personalisation on demand) uses mini-



pod, a portable terminal that constantly observes your lifestyle and habits, and adjusts the driving experience to provide greater comfort and satisfaction.

Introduced at the 2002 Tokyo Auto Show, the p.o.d creates a responsive, humanised envi-

ronment that raises ergonomics to a new level. The car observes your behaviour and tailors the driving experience accordingly. More than an automobile, the p.o.d is an intuitive driving companion. Unfortunately, Toyota attaches a little note that reads, "Concept vehicle only. Not intended for production. Don't you wish."

Def Con 10

Def Con, an annual gathering that holds the Alexis Park Hotel's all-time record for the most alcohol consumed by one group in a weekend, has always intended to be a place where the young can quietly talk tech. But on its 10th anniversary held from August 2 to 4, 2002, it became more of a party, with over 6,000 paid attendees flooding the premises—the three conference rooms used hold a combined total of just 2,800 people. San Francisco criminal defence attorney Jennifer Granick gave legal tips, while the MojoNation folks (an open source software for peer-to-peer sharing) spoke about their new better-than-Napster software. Arthur Money, assistant Secretary of Defense, spoke about hacking issues.

snapshot

31.1 million
PCs were shipped
in the second quarter of 2002

Source: Bear Stearns

Super duper computing

US supercomputers have long been considered the world's most powerful. But the Earth Simulator built in Japan with an old design runs five times faster than the previous record holder, a machine that simulates nuclear tests at Lawrence Livermore National Laboratory in the US. "This machine is so powerful that a researcher who uses it can do in one day what it takes a researcher in the US to do in one month," said Jack Dongarra, a Univer-

sity of Tennessee professor who tracks the world's 500 speediest computers.

Supercomputers have thousands of processors working in tandem to analyse the most complex issues, such as nuclear test simulations, aircraft designs and drug creation. The Earth Simulator is faster than all 15 of the biggest supercomputers in the US combined and

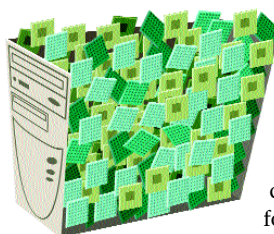
will be used in climate and earthquake studies. It uses 5,104 processors to perform 35.9 trillion calculations a second. IBM, which built ASCI White, HP and other US supercomputer makers are working

on even more powerful machines.

"We can do that in a heartbeat and with a lot less money," said Peter Ungaro, vice president of high performance computing

at IBM. Earth Simulator costs about \$350 million, while ASCI White cost \$110 million.

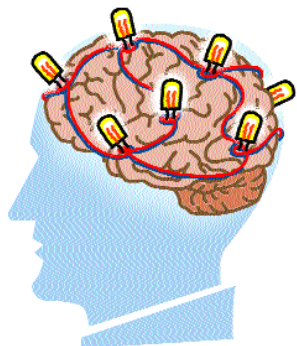
Price isn't the only factor. Certain research problems work better on one supercomputer type over the other. Custom supercomputers, for instance, have bigger data pipes, which is critical in climate modelling and nuclear research, whereas this can be a drawback for off-the-shelf processors, which work best on data analysis in fields such as genetic research.



■ Creative to ship thumb-sized MP3 player ■ HP stops selling imaging products to Dell ■ .Net will link to Apache ■ Xbox to hit 6 new countries this year

Brainfeed

Linking people's brains together to form a collective intelligence. Humans living beyond 100 years. These can all happen with proper investments in technology, according to a recent report from the US National Science Foundation and the Department of Commerce. The 405-page report argues that a host



of advances can be achieved in the next 20 years alone.

Authorities cast doubt on proposals such as capturing consciousness through computers or linking neurons with nanocircuitry. Our minds may not be able to handle the flood of information resulting from a brain-machine interface, suggests Jeremy Rifkin, author of books on biotechnology and globalisation. Rifkin said society ought to pick and choose carefully among emerging technologies, given potential downsides. "Some of that harm can be irreversible—especially in biotechnology," he said.

snapshot

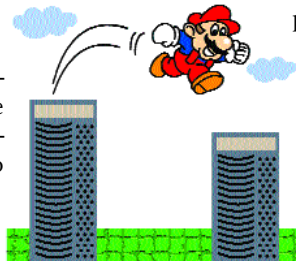
US tops Web traffic with **42.65** per cent, China second with **6.63** per cent

Source: WebSideStory Inc

Grid computing for online games

Software development site CollabNet is working with Butterfly.net, an IBM-backed effort to create a supercomputing grid for hosting online games. Butterfly will also use CollabNet's Source-Cast Web application to enable game development teams to share source code, manage assets and design games.

Butterfly.net is an effort to apply grid-computing, in which computational tasks are



spread over multiple networked computers, to the infrastructure challenges of hosting online games. The increasing sophistication of

online games, the most popular of which manage thousands of simultaneous players, has made infrastructure a growing concern among developers. Spreading the computing

power required across several computers may be the most effective solution available.

Bill's in your PC

An addition to Microsoft's End User Licensing Agreement reads as, "You agree that in order to protect the integrity of content and software protected by digital rights management ('Secure Content'), Microsoft may provide security-related updates to the OS components that will be automatically downloaded onto your computer. These security-related updates may disable your ability to copy

and/or play Secure Content and use other software on your computer. If we provide such a security update, we will use reasonable efforts to post notices on a Web site explaining the update." Meaning, MS will automatically install code of its choice without letting you examine the download or cancel it!



quoteworthy

"The more choices you have in entertainment programming, the more time consumers will spend in front of a guide. Any [TV] guide company is in a central, powerful position. The same way companies like Yahoo! and AOL are crucially important to guide people on the Internet"

Josh Bernoff, analyst at Forrester Research

"It's funky to be a geek and MP3 allows you to be an outlaw without knowing anything about technology. With MP3 you can become an outlaw just by clicking on a button"

G. Fedorovsky, British leader has started a political party named MP3!

tomorrow's technology

Roll up for the floppy television

In the past decade, televisions have become bigger, wider, flatter and now they're becoming thinner. Advancements in the development of next generation plastics that are capable of emitting light are coming closer to commercial production than ever. These screens can be rolled up when not in use. It all began with the development of a special compound called p-phenylenevinylene, which is

a type of plastic that can glow green-yellow when subjected to an electric charge. Further developments led to the creation of a polymer capable of emitting red and blue light. Laboratories like Britain's Cambridge Display Technologies (CDT), which is among the forerunners in developing this technology, say that these flexible television screens would be ready for commercial production by 2004-05.

The primary hindrance has been in finding a substance thin and flexible enough to protect the sensitive components used in the creation of these 'floppy screens' but this is also nearing commercial viability. As this technology gets cheaper, we will see fabrications of ultra-portable floppy screens that can be used anywhere from large screen public billboards, to TV-watches to even display-capable clothing!

Let us know

Dear Sir,
Earlier the customer service team used to send an e-mail to all Digit subscribers with details on when their magazine was couriered every month. This was most useful, but for some strange reason has stopped. Can you please start the e-mail notification once again?
Sandeep
Via e-mail

Dear Sandeep,
We were updating the backend subscriber database and hence could not send out notification e-mails for a couple of months. The service has been resumed from this month and will continue as before. To ensure that we have your correct e-mail address, write to narmita_shetty@issulthal.com.

digit

Game on

Dear Vinit,
I wonder what keeps the global \$20-billion gaming console industry from coming into the Indian market. The next-generation gaming consoles from Nintendo, Sony and Microsoft are doing brisk business everywhere except India. I believe Indian gamers too would love to own these new gaming machines. Plus consoles can arrest the nagging (and expensive) problem of gamers having to upgrade their PC graphics card every six months to keep up with the latest games.
Priyanshu Kakati
Via e-mail



Dear Priyanshu,
India is not a potential market for console games for a number of reasons. Console makers lose sizeable amounts of money on every unit of hardware they sell, which is recovered via software sales over a period of time. With piracy being a big problem in India, console makers cannot hope to recover their money and hence will be forced to price the hardware at a premium. Compound this with the duties that will be levied on these gaming consoles and you'll land up with prices that will be quite out of reach for most consumers.

Only when these console makers have recovered the R&D costs of their hardware will they turn to less lucrative markets like India, but that will involve a long waiting time for Indian gamers hungry to get their hands on these new game machines.

digit

Selling hype

Dear Vinit,
I quite agree with your August editorial 'One Step Forward, Two Steps Back', but one very important point that I wish to highlight is that innovations by manufacturers drive society to improve. Consider this: Windows 3.1 runs on any old 386-based computer, but if Windows 95 had not been developed, how would Intel or any other microprocessor company be able to sell faster and more advanced processors? Windows XP chokes a sub-500 MHz Celeron CPU, but Windows Me will run quite happily on it. The point is, everybody is trying to go higher and, in turn, they compell other manufacturers to make better products. And it's not that there is any real need. There are very few things that can be done on XP, but not on Me. Then do you need XP? The simple answer is yes. Because of Windows XP, there is a Pentium 4, which makes RDRAM useful, and which in turn facilitates the need for newer chipsets and motherboards. All this translates into a lot of jobs for people and yes, money!
Hrishikesh Thite
Via e-mail

Dear Hrishikesh,
There's no denying that innovations are needed for our society to improve and grow. The irony is that there is so much clutter today that manufacturers and marketers need to hype up their innovations in order to attract customers in the first place!

digit

Web of confusion

Sir,
In the comparison between Adobe GoLive 6.0 and Macromedia Dreamweaver MX (Digit, July 2002), you have mentioned that GoLive uses relative links, which is bad. When you upload your files to the server, you would obviously want relative links, so GoLive is a winner as far as I'm concerned!
Premshree Pillai
Via e-mail

Dear Premshree,
You've misread the little note on GoLive. The problem was that when you created a new page in GoLive, it used relative links from where GoLive assumed the page would be saved and not where the page was actually saved. Thus, all the links were wrong. I'm sure you wouldn't want this situation when uploading to your server.

digit

Your vote counts

Q. Which amongst these four comparison tests would you like covered in an upcoming issue of Digit?

DVD-ROM drives	Input devices	PC cabinets	MFDs
36%	15%	23%	26%

Look out for a DVD-ROM drive shootout in a forthcoming issue!

This month's question:

"Which of these would you prefer covered in greater detail?"

■ Linux ■ Gaming ■ Mobile computing

Log on to www.thinkdigit.com and vote on it

Spotty scanner

Hi Vinit,

The August issue with the scanner and OCR software test was just the thing I was waiting for. However, the test team should have also covered the build quality of the scanners. I bought a Umax 4400 after reading your test, but the glass seemed to have some stains on the inside. This could only be seen when the lamp was switched on. I returned the piece and got another one, but this one has the marks as well, though not as bad. Did your test team notice this?

Gerard
Via e-mail

Hi Gerard,

No, the Umax 4400 scanner we received didn't have any stains or marks on it. Scanners are quite delicate and are prone to damage during transportation and handling and we did receive a number of broken scanners for our test. You should consider exchanging your scanner till you are satisfied, as any stains on the glass surface might adversely affect the scan quality.

digit

Lagging behind

Dear Vinit,

I'm quite satisfied with Digit as it has really great content and I've gained a lot of knowledge from it. But why doesn't Digit keep its readers abreast about the latest international products and their prices, apart from those that are available locally? Not only would we be aware of what we're missing out on, but could also procure the products through someone else. This would be one more step towards making Digit a truly international magazine.

Sophia Ajaz
Via e-mail

Dear Sophia,

Digit is an international class technology magazine for India. Only a select handful of our readers can actually purchase products from abroad by buying them online or ordering them through relatives and friends. Also, there would be innumerable delays in sourcing these 'just released' products from outside India for testing. Besides, Indian vendors are actively working towards reducing the time lag between international and Indian release dates, with some products being released concurrently worldwide. Hence, we only review and test products that are readily available in the Indian market or those which a majority of our readers would have access to, such as new software that can be downloaded from the Net.

digit

Short Bytes

Rock on

Hi Vinit,

I have always skipped the music section of Surge, because I don't like techno and trance, but the Indian rock collection on the August 2002 Playware CD was fantastic.

Vishal

Via e-mail

Hi Vishal, Indian rock bands have definitely come of age. And the most amazing thing is that these bands created the music on their PCs!

Dr Digit

Dear Digit,

You will be surprised to know how popular Digit has become in the doctors' community, especially amongst medical students and new doctors like me. There are so many of us who wish to be current with our knowledge of the tech world and at the same time want it to be simple. Digit is truly a technology magazine for the common man.

Manoj Khemani

Via e-mail

Working smart

Dear Digit,

I often have to send my presentations to clients, but am not too sure whether they have PowerPoint on their machines. Is it possible to send my presentations created in PowerPoint XP in a format that will enable the receiver to view it without any problems such as missing fonts, slide transitions, etc?

G. Seth
Via e-mail

Dear Mr Seth,

We receive hundreds of similar mail every month asking for solutions to common problems faced by people working in a modern office. So we've decided to compile the most frequently asked questions and present them to our readers in a special edition of this month's Tips & Tricks titled Smart@work. For an answer to your particular question, turn to page 114.

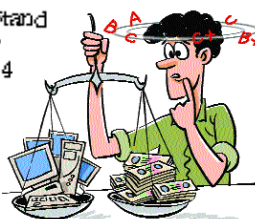
digit

Need for speed

Dear Vinit,

I don't understand one thing: the Intel Pentium 4 2.53 GHz reviewed in August 2002 is faster than Pentium 4 2.4 GHz, but you have awarded it a B+ rating against the A- rating given to the latter. All the features are the same in both, except for the clock speed.

Sri Harish
Via e-mail



digit

Dear Sri,

We take various parameters into account while reviewing a product such as performance, features, build quality and value for money. Even though the Pentium 4 2.53 GHz is faster than the P4 2.4 GHz (and its performance scores reflect this), it loses out heavily when it comes to value for money. This results in a lower overall score and grade for the faster albeit pricier processor.

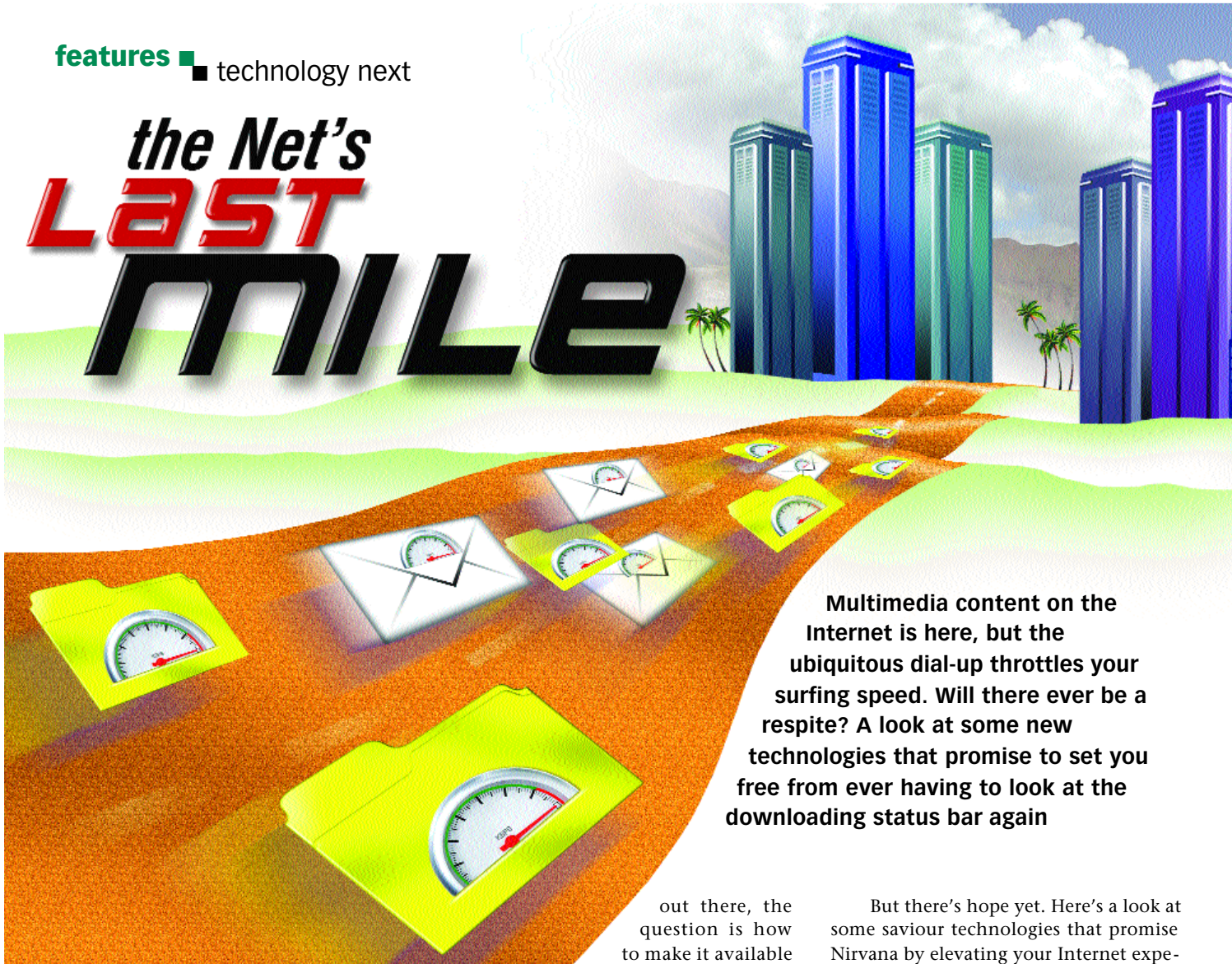
Send your letters marked 'Readers Letters' to the Digit office:
D-222/2, MIDC, TTC Industrial Estate, Om Sagar Building, Nerul, Navi Mumbai 400 706,
Phone: 022-7629191/9200 Fax: 022-7629224
E-mail: readersletters@jasubhai.com

Goof Ups

- In the scanner comparison test (August 2002), we've incorrectly mentioned that the HP Scanjet 5400C, 5470C and Microtek ScanMaker X12USL (pg 60, features table) do not have removable lids.
- Several readers have complained that the Java 2 Development Kit (Mindware CD, August 2002) was corrupted. We'll provide a fresh installation with the October issue.
- In the printer comparison test (July 2002) we've incorrectly mentioned that the HP Deskjet 845C (pg 55, features table) has a parallel port.

Notice any goof-ups? Write to
goof@jasubhai.com

the Net's **LAST** MILE



Multimedia content on the Internet is here, but the ubiquitous dial-up throttles your surfing speed. Will there ever be a respite? A look at some new technologies that promise to set you free from ever having to look at the downloading status bar again

The Net today offers very vivid content such as animation-rich Flash Web sites, streaming audio and video news and full-motion videoconferencing with friends and family abroad. But these services require a high-bandwidth connection—something that every Net junkie dreams of.

The Internet actually operates on very high bandwidth pipelines, but the problem is that most of us never ever get to experience this speed. Take, for example, the case of the backbones of the Internet that are used to connect countries to one another. These are based on ultra high-speed optical connections such as OC-12 lines, which offer a bandwidth of 622.08 million bits per second—with such bandwidth at your disposal, you could transfer an entire CD in 9 seconds flat, twice as fast as the practical data transfer rates of most hard disk drives used in PCs!

With all this delicious bandwidth

out there, the question is how to make it available to end-users as efficiently and cheaply as possible. The popular standard of Internet access for most surfers today is through the trusty but archaic telephone network. Dial-up connections provide cheap access to the Net but prove to be a bottleneck for bandwidth-demanding applications such as real-time audio and video applications, as they are only capable of delivering transfer rates at a maximum of 6 Kbps. With the proliferation of peer-to-peer applications, millions of files are just asking to be downloaded, and this last mile connectivity is the only hindrance. Other alternatives like DSL and cable modem are too expensive and their availability is limited. Additionally, the effective bandwidth of these supposedly 'broadband' services is curbed in most cases and the end-users are left with a rather narrow-band experience.

But there's hope yet. Here's a look at some saviour technologies that promise Nirvana by elevating your Internet experience to a higher plane.

Internet at the speed of light

Very few establishments, much less homes, are located within close proximity of an Internet backbone. So far, the only way to create a high-bandwidth link with the Internet backbone was by setting up optical fibre connections, but this is not a viable option for most. One of the most promising technologies that effectively deal with this problem is Free Space Optics (FSO). FSO uses laser beams capable of carrying enormous quantities of data at high speeds. These laser devices can be mounted on top of buildings pointing at one another, creating an invisible laser mesh of optical connectivity over short distances.

The US Army has been using this technology since the 1980s to carry digital information through modulated laser beams. However,

Cost and time to install per building

Fibre optics link: up to Rs 1 crore; four to 12 months

FSO link: about Rs 10 lakh; two to three days

the devices have to have a clear line of sight between the transmitting and receiving stations in order to work. These laser systems operate in the terahertz (THz) frequency spectrum and usually operate in the 194 THz or 375 THz range. Their performance is comparable to the best fibre optic system available, giving speeds between 622 Mbps and 1.25 Gbps. Research predicts that this can go as high as 160 Gbps—faster than your hard disk's interface!

Another advantage of this technology is that it's portable and fast to implement. Conventional high-speed connections like T1 lines take between two to four months to install as the roads have to be dug up to lay down the cables, not to mention the bureaucratic formalities involved. On the other hand, FSO only involves mounting the transmitting and receiving units between buildings. FSO devices look a lot like security video cameras and can be mounted on rooftops, corners of buildings or even inside offices behind windows. Another inherent advantage with this system is that of security—it is exceedingly difficult to jam or intercept an optical signal without breaking it, thus alerting the user.

However, FSO does have its disadvantages. Interference with the line of sight is one of the biggest drawbacks. If the laser beam is broken by a passing bird or heavy rain, it will affect the bandwidth or even halt data transfer completely. Even extreme weather conditions like fog and mist diffuse the beam and disrupt data transmission. In high-rise constructions, the wind causes the buildings to sway, affecting the alignment of the laser beam if the equipment is mounted on top of the structure. Service providers have created multiple workarounds for these problems that basically work at maintaining the alignment of the transmitter and receiver in real time. Such systems have been used successfully in ships that were able to maintain connectivity with hubs located on the shore. However, these work out to be much more expensive than conventional FSO systems.

As with any other budding technology, in order to get it out of the laboratories and into the realm of mass acceptance, it has to establish its reliability. Most FSO companies demonstrate a reliability

of 99.99 per cent at distances of up to 2 miles, compared to the magical 99.999 per cent expected of broadband connectivity. It is this 'five nines' reliability that still eludes most implementers of this technology.

As FSO evolves, its ease of implementation and cost-friendliness breeds the possibility of connecting rural areas, where laying fibre optic cables is economically unadvisable. It can also be applied to cellular phone technology, paving the way for broadband 3G cellular networks or even as a temporary network for disaster management (*see box, 'FSO to the Rescue'*).

The power within

Every few years, an innovative use of an existing technology bridges the gap between the old and the new, making us think, "Gee, why didn't anyone think of this before?" Power

Line Communications (PLC) is one such technology. Using PLC, various companies have used ordinary power lines such as those found in homes and offices to transmit data.

Theoretically, the maximum bandwidth achievable with PLC is 14 Mbps, and the practical speeds range between 6 to 8 Mbps, making it slightly faster than WiFi (Wireless Fidelity) networks. WiFi is a standard for devices compliant with the 802.11b wireless standard (*for more information, see 'Wireless Connectivity' in Digit, June 2002*).

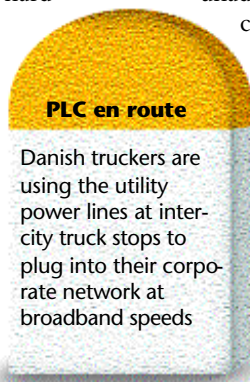
But once networking enters the realm of utility power lines, it is in very harsh territory, electrically. It will have to address the issues of static, noise and high

voltage before it is looked upon as a viable networking system. The evolution of Application Specific Integrated Circuits (ASICs) is the main driver of PLC technology. ASICs are basically small processors with powerful signal processing capabilities, which filter out the noise in the power lines. Unlike a traditional Ethernet-based network using CAT5 cable that is far more controlled in terms of shielding, power, voltage levels and impedances, utility power lines present a nightmare of situations that need to be dealt with for reliable data transfer.

One of the biggest hurdles in home PLC is the varying transfer function of the power circuitry. The transfer function is the overall response of the power lines, taking into account the different impedances and the levels of voltage all over the lines—the transfer function will vary if you plug in a new appliance or switch power supplies. To counter these situations, a technique that allows adaptive response to variable conditions in the power line was developed. HomePlug is one such standard that allows home networking through power lines. It employs an adaptive approach to get the highest possible data transfer rate on the channel by varying the bit rate of the information in accordance with the noise levels and the condition of the power line.

Another concern is that of security—since most homes in a neighbourhood are connected through a single distribution grid, there exists a distinct possibility of your neighbour being able to pry into your network. Some manufacturers have integrated passwords into their home PC gear to solve this problem.

PLC removes the need for an additional network between your home and



FSO to the Rescue

One of the most critical implementations of Free Space Optics (FSO) technology was seen during the September 11 tragedy, where various FSO services provided the much-needed bandwidth to the rescue teams. Its ease of installation made FSO the only viable technology to respond so quickly to the bandwidth requirements. FSO companies such as LightPointe and Terabeam restored gigabit connectivity within a week to companies such as Merrill Lynch, which was losing millions of dollars each disconnected day and Federal



WTC Twin Towers

Emergency Management Agency, which carried out the rescue operations.

service provider, since the network is already in place and more widespread than ever. In developing countries, the electric power line infrastructure is more widespread and robust as compared to the telephone network, making it possible to connect even the remotest location to the Internet.

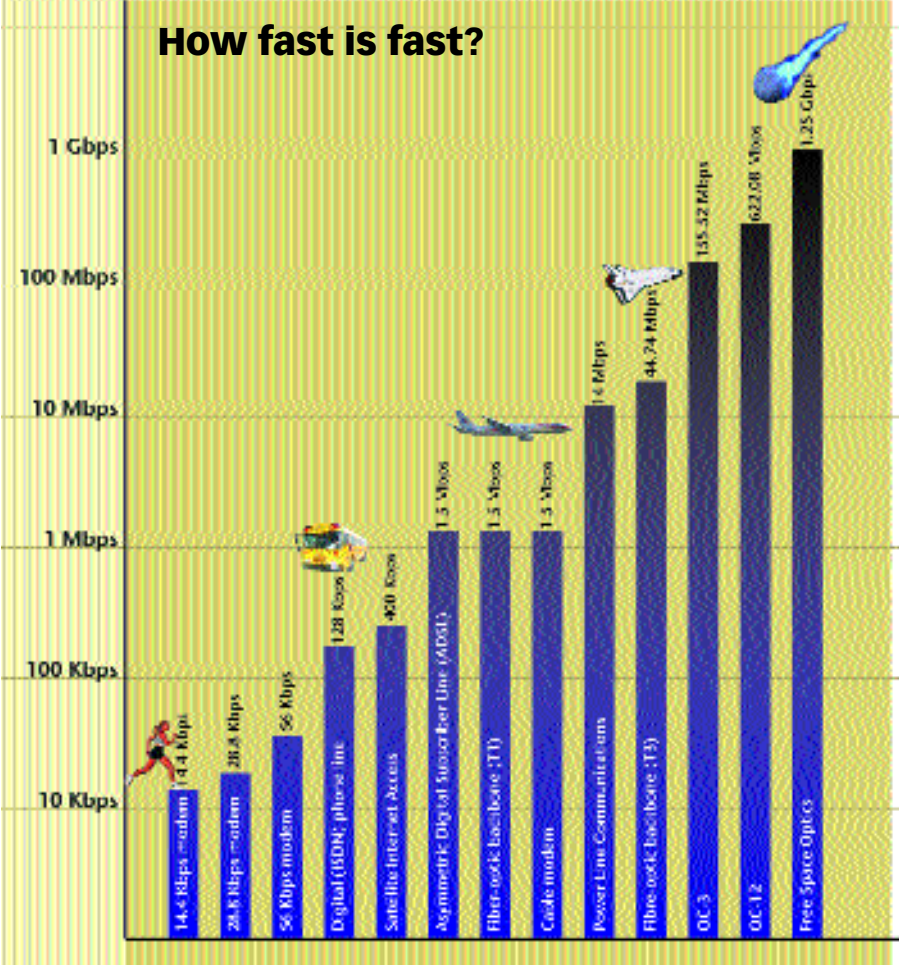
Thomas Edison once said, "I'll make electric light so cheap that only the rich can afford candles." PLC is all set to deliver on a similar promise for Internet connectivity.

The Web from outer space

Satellite communication has been here for a while; cable television transformed our television watching experience from a bland three-channel serving to a splendid buffet of over 150 channels! These silent machines set in the blackness of space are now entering the realm of home Internet access.

Satellite Internet Access (SIA) is a relatively high-speed service that uses orbiting geo-synchronous satellites to beam down information. However, this technology works in tandem with your existing Internet connectivity; users still connect to their present Internet service provider to upload and transmit data.

The process is very simple—you dial into your Internet service provider and the requested data is sent from your ISP to a special server from the SIA provider called the Network Operations Centre (NOC). This server retrieves the requested information from the Web server but instead of sending it back through the ISP, it beams it up to an orbiting satellite, which in turn transmits the data to a little satellite dish out-



There's been a quantum jump in last-mile Internet connectivity. This logarithmic graph depicts the bandwidth of various Internet technologies from the lowly modem to FSO.

side the user's location. From here, it passes through a special modem that decodes it and sends the information to the user's computer. The entire process takes less than half a second to complete, which is rather long for a single request of information.

Due to this inherent latency, SIA is most suited to applications involving sustained data transfer (such as large file downloads and streaming audio and video applications) rather than repeated access to small amounts of data (as in Web browsing or playing games). Another disadvantage is that it is still expensive and relatively more difficult to install than DSL or cable. The service promises download speeds up to 400 Kbps, while the upload speeds depend upon the service provider.

From Fiction to Fact

Arthur C. Clarke, the science-fiction novelist, first postulated the idea of using satellites for point-to-point radio communication back in 1947

However, newer systems offering download speeds up to 1.5 Mbps, with upload speeds of 200 Kbps are in the pipeline. Understandably, this system, in its present state, will be more suited to applications that stress on downloading information rather than uploading.

What tomorrow holds

Yesterday was the era of text Internet; today is the age of sound and animation; tomorrow will usher in a radical epoch of high-quality audio and video streaming, interactive video-conferencing and megabyte downloads in minutes. The last mile has always been a hurdle in the path of high-bandwidth Internet connectivity. Once these new technologies are economically viable, our perception of the Internet will change forever. And the dice has already been rolled.

MARCO D'SOUZA

Web Resources

Free Space optics
<http://www.terabeam.com>
<http://www.lightpointe.com>
<http://www.lightpointe.com/index.cfm?fuseaction=technology.WhitePapers>
http://www.airfiber.com/tech/WP_laser_eye_safety.pdf
<http://www.freespaceoptic.com/>

Power Line Communications
<http://www.homeplug.org>

Satellite Internet Access
http://www.isp-planet.com/fixed_wireless/research/satellite.html

Panasonic SV-SD80 MP3 Player ▶▶ Lilliputian with the heart of a Goliath

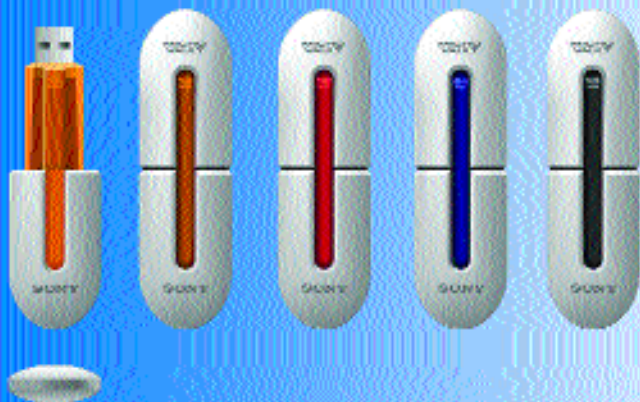
No bigger than a matchbox and weighing only 26 grams, the SV-SD80 has the distinction of being the world's smallest digital-audio player. This player sports an impressive battery life of 50 hours of playback time. Based on a 64 MB SD card, it can store up to 2 hours of near-CD quality audio. It hosts a USB interface and features a clear display and an incandescent neck-strap—it can't get more feature-packed than this!

Web site: www.panasonic.com



tiny TOYS

Small gizmos that pack a punch!



◀◀ Sony MicroVault The united colours of storage

Sony's MicroVault USB storage media is the perfect medium for transporting presentations, MP3s and work data from PC to PC and sharing them with colleagues, clients, friends and family. It weighs 20 grams and measures 26x13x92 mm. Its USB interface enables it to be plugged into computers on the fly. Based on Flash memory, this thumb-sized storage device is fashion savvy and comes in colour coded cases that are based on the storage capacity—so think orange for 16 MB, wear red for 32 MB, choose blue for 64 MB, and black for 128 MB.

Web site: www.sony.com

PRO FX A/V Recievers, with
technology from Denon.
For the ultimate
Home Theatre experience.





◀◀ **Sony Vaio U1** **So much, so small**

Sony's Vaio U1 sets a whole new ultra-small standard for the world of notebooks—it weighs a meagre 816 grams. The package includes a Crusoe processor running at 867 MHz, 384 MB RAM, a 20 GB hard disk and a 6.4-inch TFT LCD. It runs Windows XP and has a built-in zoom function that magnifies the screen at the touch of a button. Its 7.3x5.5-inch frame includes two USB ports, a PC Card, memory stick slots, an i-LINK (IEEE 1394) terminal, as well as an Ethernet port. Now you can hold your whole office in the palm of your hand!

Web site: www.sony.com

PRO FX
ADVANCED AUDIO IMAGING SYSTEMS
DROOL of the month

**PRO FX range of
A/V Receivers**



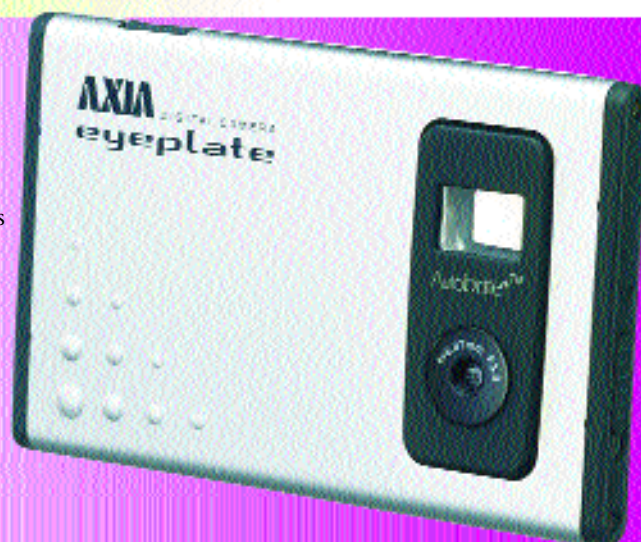
AVR - 3802

Check out more details in the Playware CD

Fujifilm Axia Eyeplate ▶▶ **Axia power! Go get it!**

This aluminium-encased camera could easily be mistaken for a credit card! Only 6 mm thick, the Eyeplate is astoundingly light at 35 grams. It features 8 MB of built-in Flash memory, and is capable of storing 26 images at a resolution of 640x480 or 101 pictures at 320x240. It extends a popup lens while taking pictures, which retracts when powered off. You can upload pictures to your computer via the USB cable and simultaneously charge the internal batteries. It adopts the Autobrite technology, which automatically adjusts the brightness of the subject when shooting against a bright background.

Web site: www.axia.co.jp



◀◀ **Panasonic SV-AV10** **Three for one**

This dwarf-cam is loaded with serious wow factor. At a mere 1.1x1.97x3.43 inches and 100 grams, the SV-AV10 captures low-resolution video and stills, plays digital music and records voice memos. Its super compact design includes a flip-out LCD, and it keeps the size down by relying on Secure Digital (SD) removable media for storing all the digital data.

Web site: www.panasonic.com



AVR-1802

Home Theatre · Hi-fi · Professional Audio



AVR-1602

PRO FX
ADVANCED AUDIO IMAGING SYSTEMS
PURE EXPERIENCE
www.profx.com



CARIC DESIGN: Rami

Everywhere

From the minute we wake up to the time we go to sleep, technology touches us in many ways. A look at how technology is entrenched in our lives

Family ties



Kumar residence, Andheri

Roop Kumar wakes up to the sound of the alarm set on his cell phone. It's a custom ring tone based on a song from his favourite movie *Dil Chahta Hai*, which he downloaded two days ago. By 7 am, the Kumar residence is bustling with activity, with the usual battles for the bathroom and squabbles over breakfast. Roop decides to get some work out of the way and retires to his PDA where he schedules his meetings and plans the day ahead of him.

While Roop is the man of the house, when it comes to the PC, it's his 19-year-old son Atul who gets the upper hand. "I'm not very good with the PC, but my son tinkers with it all the time. He was the one who figured out how to hook the MP3 player to the car," says Roop, while

his son uploads a new set of songs into their MP3 player. He's also the one to hook up his audio

system to his PC, while his comparatively underpowered computer speakers gather dust on the table.

"I usually spend late nights surfing and downloading, even though my connection lets me be online all the time," says Atul. His Cable Net connection gives above average speeds late in the night, a development that has changed his body clock and sleeping hours. His computer's on all day, leeching off MP3s from P2P applications. Three songs are being downloaded at speeds of less than half a kilobyte per second while 14 more are in queue. "When I used a modem, I used to hog the land-line and the phone bills were a nightmare. Now it's bye-bye to dial-up connections and extravagant phone bills! For Rs 800 a month, I'm connected to the Net all the time!" says Atul in a voice filled with glee.

A couple of years ago, the PC was exclusively Atul's domain, but now the rest of the family is just as involved. "It's become too easy. Supriya's on the messenger all the time with her friends. It's one of the reasons why I want to switch to Linux,"

he complains. "I'd like to have another PC and network it to this one," he adds. "There are so many old parts lying around the house. We have a spare monitor and a Pentium 100 MHz—I could easily get another PC up and running. I just need some extra RAM and a new hard disk."

"I've spent over a lakh and a half on the PC in the last year," sighs Roop as he peers through his bifocals at the monitor. Right now he is mailing himself some files, which he can later access at the office. Simultaneously, he looks up the headlines and checks the latest stock quotes at the Mumbai Sensex. With online stock trading, it's been such a long time since he actually needed to talk to his share broker. "It's my new habit. I keep checking the stock quotes of my portfolio whenever I get some free time. I never close the window; I just click Refresh every few minutes, even at work," he says.

Office hours



Roop Kumar's office, Nariman Point


While sipping on his first cup →

THE CAST

Father: Roop Kumar
Mother: Hema Kumar
Daughter: Supriya Kumar
Son: Atul Kumar

of tea for the day, Roop juggles multiple browser windows. He downloads his e-mail, which filter themselves into different folders—newsletters, personal, work and spam. He connects his PDA to his PC and gets updates from his favourite news channels using *avantgo.com* and sends off the e-mail he typed the previous night. “The PDA is a godsend for a person like me who’s frequently on the move. I can keep track of all my tasks for the day, track expenses and make a to do list on a device that can inconspicuously fit in my jacket pocket. All in all, I find this to be a very useful device, especially when I’m bored during the long commute everyday—I play games on it.”

Roop does most of his banking and bill payment from the office itself. “Net banking is such a lifesaver. I used to waste a lot of time paying bills and updating my passbook but now I can pay my bills, check my account or cheque status, transfer money or stop payment, without moving from this chair. I don’t know how I ever managed without it!”

 His cell phone beeps. It’s a reminder for his meeting with the Vice President who’s at the head office in Delhi. Roop turns to his PC and starts the Video Conferencing linkup. This is the practice in his office when it



Karishma Shah
STUDENT

“There are two things on my wishlist: a scanner to digitise all my old photographs and a speedy broadband connection”

Campus capers

 **Mithibai college, Juhu**

Supriya is hanging out with her classmates in the college canteen, when she remembers that she has a big test coming up. Pulling out her cellphone she punches an SMS to her batch-mate Karishma Shah: ‘can i borrow ur psycho notes plz? thx bye’. The cellphone is a hand-me-down from her dad when he got himself a sleeker and smaller model. The family stays in touch through SMS all the time, be it a request for a special dish for dinner, or informing of a late night out.

Speaking of studies, “I get most of the research for my papers off the Net and then just photocopy them for a set of notes to exchange with friends. This way we all end up doing only a fraction of the research needed,” says Supriya. Fifteen minutes later, her friend Karishma joins in the discussion of how technology has changed lives, for better or for worse. Both agree that women are more inclined to use Internet for communication above anything else: “The most important way that technology has affected my life is communication; I get withdrawal symptoms if I’m away from my Net connection and my mobile phone. I feel cut off and lost without it,” says Karishma. She’s not much of a gadget freak and doesn’t have any gizmos on her wish list. “I got a CD-Writer so that I could burn audio CDs

and free up some space from my PC. I’d also like to buy a scanner because I have tonnes of photographs that I’d like to scan and upload to a photo album online, but that’s pretty much it.”

“I also plan to study further in the US or Canada and I’m studying for my GRE exams. I have joined an online training course that covers the GRE syllabus. It’s

Must-have Gadgets

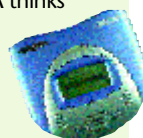
Cellphones: In the fast-paced, urban world, cellphones are a necessity. They are easy to carry around and have been getting smaller each year. Today’s cellphones offer advanced features such as text messaging, GPRS, games, calendar, calculator, reminder and custom ring tones.



PDA: A PDA used to be like a private secretary—you could schedule your daily work, make appointments and read text files. Today it can be equated with a personal computer—you can watch movies on it, play music, surf the Internet using a fully-featured Web browser and even use it as a handy-dandy digital camera!



MP3 Players: Digital music is here to stay, no matter what the RIAA thinks about it, and an MP3 player gives it the much-needed portability. MP3 players are more compact and portable than CD players and you can even buy one with Flash memory. Some provide up to 6 GB of music, which translates into a lot of albums (see ‘Music Unplugged’ on page 72).



Game Consoles: Consoles have always been the bigger brother to PC gaming, with higher market penetration and a larger roster of games. They are simple to use, addictive and can be played on a television. And there’s no issue of patches, driver updates, or system instability. If it’s no-frills gaming you’re after, a console is exactly what you need.

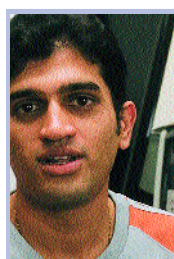


easier than ever to study this way and I always get access to the latest information,” asserts Karishma.

Home alone

 **Kumar Residence, Andheri**

While the rest of the family is busy with the day’s work, Atul is playing *Counter-Strike* on the local area network. He has a few friends in the neighbourhood who are keen gamers and with very low ping times between their computers, the experience of overpowering



Vikram Mody
STUDENT

“I chat with my friends abroad, using a Web cam. It is so easy and saves me heaps of time and money”


comes to meetings with people from the head office or the regional offices. He had suggested this as an efficient and cost-effective method and now has some very pleased superiors.

He receives an SMS from his friend Ravi: ‘lunch @ 2?’ Roop punches ‘ok’ and sends it back immediately.

your buddies in a strategic war is an intoxicating experience. Right now only Vikram is online, so it's a one on one game. "I remember playing 3 hours of monopoly and scrabble with my family. It used to be quite tedious. Now with *Command and Conquer* and *Counter-Strike*, I have a lot more variety in terms of new challenges and people to play with."

Vikram's ageing TNT2 graphics card cannot handle all the requirements of the high-end games, but he has no intention of upgrading his graphics card yet. "Let ATi and nVidia have a price war first with their next generation cards! Besides, a graphics card is low in my priority as I use my PC more for communicating with my friends abroad."

Play time

Entertainment for the Kumars
 Hema comes online to remind Roop of the family dilemma that

was the cause of the squabble at breakfast—evening entertainment. Should they a) watch the movie running at Regal cinema or b) rent a DVD and watch it over dinner? Roop reads up a few reviews of *Minority Report* online and decides to drop it. "I still rely primarily on input from friends and co-workers for advice on these sort of things, but if I'm surfing and I see a movie or a restaurant that's received a glowing review, my odds of checking it out go up considerably." He makes a call to his neighbourhood DVD rental store for the latest DVD and stops to pick it up on the way home. "I like DVD movies. They have far superior sound and video

Project Oxygen

Imagine being logged onto a computer all the time, no matter where you went, or what you did. The computer would always run in the background, unobtrusively and seamlessly, forming an integral part of your daily life, like an element as pervasive as oxygen. That's the idea behind MIT's \$40 million Project Oxygen, which attempts to make us all nodes on the network, reachable any time, any place.

The project consists of four components that use techniques borrowed from a variety of disciplines. The

Handy21 is an all-in-one device that can be a GPS module, a two-

way radio, a television, a pager, and a hand-held computer rolled into one. The Enviro21 is a stationary unit that enables computers to monitor our activities and body movements through infrared cameras. The N21 network links you to the World Wide Web and Natural Speech lets you communicate directly with the devices using voice commands.

Oxygen lets the network know where you are, and what kind of a device you are using at any given time. Suppose you are outside, walking the park, with a headphone and a microphone attached, the network innately knows the best way to reach you. This dramatic new project will help in organising our complicated lifestyles, but the revolution also raises some troubling privacy issues.

quality, are easier to store, and you don't have to rewind them!"


Back home, Hema is searching for the recipe for Avial, a south Indian delicacy. "I use the Net for surfing once in a while, but usually only to send e-mail to our relatives. Now that we have a Web cam, we can have a face-to-face chat with our relatives abroad—seeing them in person is such an amazing feeling," she gushes. The family gathers together at 7.30 pm for an early dinner, when Roop delivers his final observations.

"For what it's worth, technology has drastically changed the way I do things. For example, the yellow pages are sitting

in a corner of my house collecting dust, since I use the Internet to search for local businesses. I research products online and use the Internet to check whether a business carries a particular item I want instead of calling them personally. In fact, if a company doesn't have at least a rudimentary Web site, the likelihood of me patronising them drops dramatically."

Third wave

Most of the daily activities that the Kumar family engaged in would have sounded like science fiction 10 years ago. Yet millions of people are living similar lives.

The next revolution in technology, which some are calling 'pervasive computing', attempts to bring computing even closer to our lives. The idea is to put a computer into everything and then hook it up to the Net. Pundits envision that in the next 10 years, thinking appliances, clever clothes and intelligent cars will be commonplace. Whatever the speed and shape of pervasive computing, the hope is that it will keep its main promise: integrating computers and the Internet into devices so imperceptibly that we'll forget they're there! 

SRIRAM SHARMA

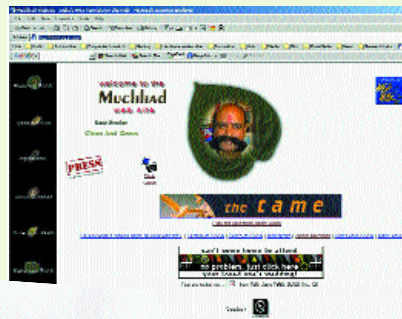
Mucchad, The First Paanwalla on the Web

Jaishankar Tiwari, more popularly known as Mucchad, is a minor celebrity in Warden Road, Mumbai.

What makes this *paanwalla* a legend, apart from his prominent moustache, is that he has his own Web site. He has several enduring fans who swear by his Calcutta *ek sau bees* and *meetha paan*.

Visit www.paan.com, and you can order *paan* or Mucchad special *supari* via e-mail. The site traces the history of *paan* from its origins in the Mughal era and differentiates between the varieties of betel leaves and *paans*, explaining the ingredients that go into making a *paan*.

Mucchad has had people from the US signing his guestbook and placing orders.



He's not quite ready to export *paan* to the US yet, but his site serves as an example of how technology has been adopted even by the layman and not just the English educated urban populace.

Technology and You

How much of a technophile are you?

What are the ways you use technology in your daily life? Feel free to share your experiences at readersletters@jasubhai.com.

How we Test



It looks good and the technology is glitzy, but does it do the job?

The Digital Media Test & Research Centre (DMTRC) conducts a series of elaborate tests to evaluate the merit of each hardware and software product. To ensure that our readers have all the information they need to make an informed buying decision, engineers at DMTRC evaluate and review the latest hardware, software and technology services in accordance with the most up-to-date evaluation processes and methodologies used around the world.

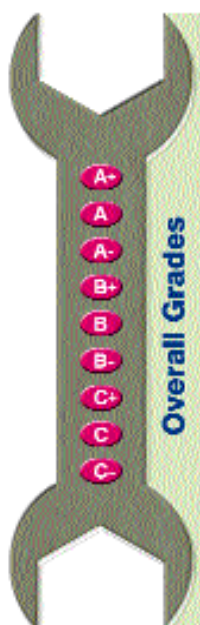
Comparison Tests

We use a dual rating system, the first of which is applied to the Comparison Tests in which we compare the performance of products within a particular category.

Each product is evaluated under different parameters such as performance, value for money, features, warranty and support, etc.

Weightages are then applied to the various test parameters according to their importance for that particular category of products.

These weightages are then used to arrive at an overall grade for each individual product. An overall grade of A+, therefore, indicates that the product is close to perfection.



The Awards

Digit awards outstanding products by selecting a Best Performance and Best Value winner in each comparison test. The winner of the Best Performance Award will be the product that scored the highest in the performance segment of our tests.

This award represents the best performing product in our tests and doesn't factor in any other parameter such as value for money, features, support, etc. The winner of the Best Value Award will be the product that scores the highest in our value for money parameter which is derived

taking into account the ratio of a product's performance and features to its price. The product winning this award offers good performance at a great price.



In Bazaar

The second part of the rating system is used to evaluate individual hardware and software products in the Bazaar section. The evaluation covers parameters such as performance, ease of use, value for money and the build quality/features of the product in question and then arrives at an overall rating.

Here each of these parameters is given a weightage of 25 per cent and is rated on a scale of 5, which is represented by arrows (▶).

The greater the number of arrows, the better the product. This simple five-point rating system is designed to give you an easy-to-interpret assessment of a product. For example, a product that receives an overall score of five arrows signifies an outstanding buy!

The 5-point Rating System used in Bazaar

▶ ▶ ▶ ▶ ▶	Excellent: a brilliant combination of price, performance and features—far beyond expectations
▶ ▶ ▶ ▶ ▶	Good: a good buy, better than most products in its category
▶ ▶ ▶ ▶ ▶	Average: reasonably competent but nothing spectacular about the product
▶ ▶ ▶ ▶ ▶	Mediocre: does not live up to expectations, needs improvement in many areas
▶ ▶ ▶ ▶ ▶	Poor: has serious drawbacks and needs improvement before it can be used for its target application

In Test this Month

The comparison test this month aims to present you with the right acoustic offering for your PC. We first evaluated 29 speakers that delivered everything from a 2.1-channel sound for general home use, to a complete 5.1 surround setup for a Dolby Digital experience. Find out which speaker sets emerged unscathed from our gruelling sound quality and performance tests to offer you the best audio solution for your needs.

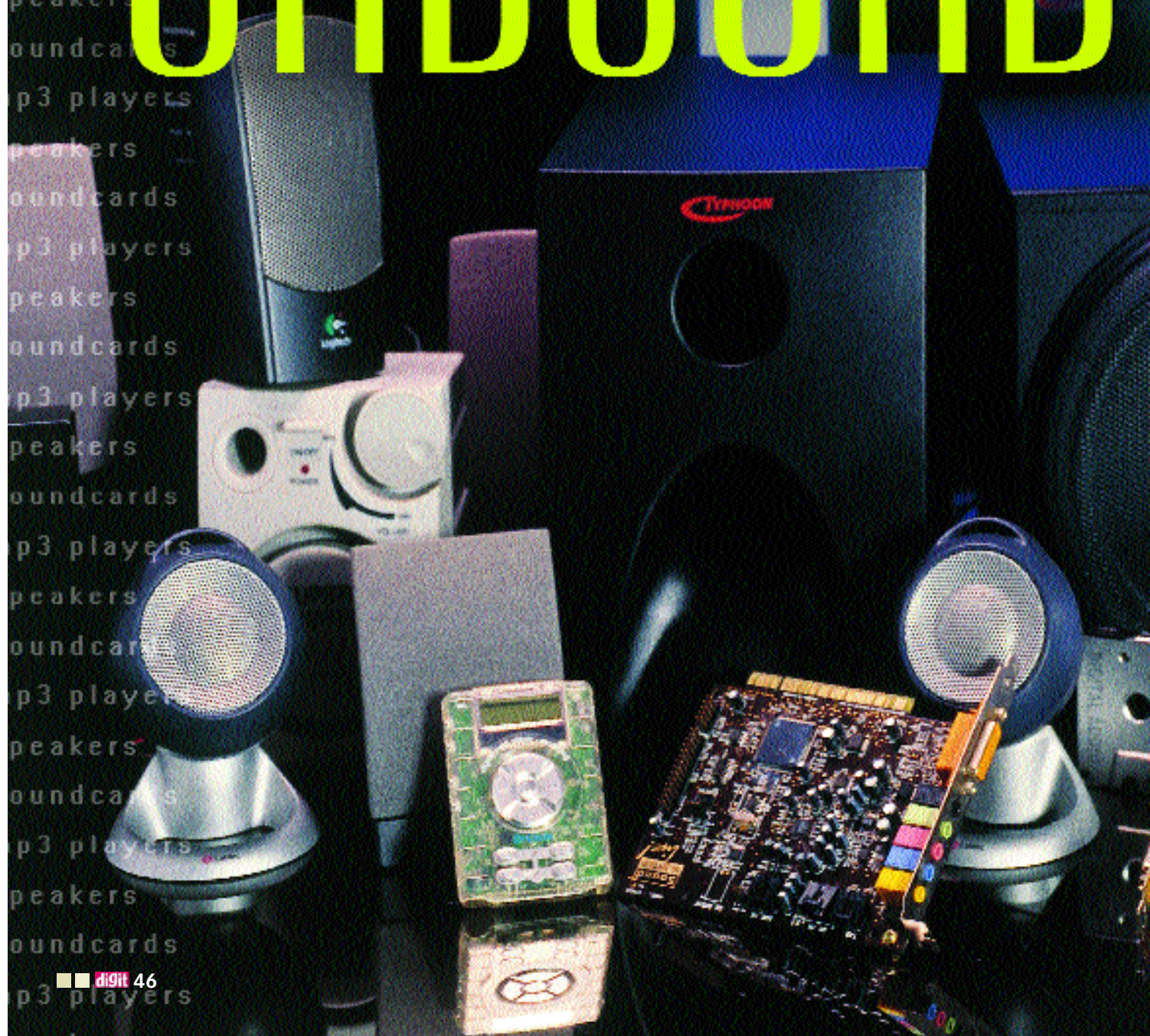
Soundcards provide the easel on which the speakers paint their magic. We thus checked out six soundcards that will convert your dull computer into an aural beast fit to stalk even the best Hi-fi systems. Our bag of tricks included performance tests to test the mettle of every soundcard, even as we grilled each card on the features that it offered. The cards we tested are sure to please your ears, whether you are on a budget, or are looking for the most professional solution.

Finally, to complete the picture, we brought in the MP3 players. With MP3 music blaring out of every computer in the world, we thought it time you carried the music along. We thus tested six portable MP3 players; within the array you will find both solid state devices and CD-based solutions.

In our Bazaar section we bring you the first-ever test of some of the hottest products and technologies in the country. This month we put the fastest CD-Writer to the test—the LITEON 48x. We also evaluate the Intel Celeron 1.7 GHz processor.

test drive ■ sound solutions

UNBOUND



SOUND



No more are we satisfied with sound systems that merely output sound. We now expect a full-blown surround sound experience that lets us feel everything from a room-shaking grenade explosion all the way to the gentlest gush of wind in next-generation games and DVD movies.

Convergence has made it more viable to integrate a home entertainment system within the computer itself, rather than go down the conventional route of buying separate devices for audio and video. With falling prices and increasing availability of these products, we now have a choice from amongst an array of truly utilitarian and sometimes downright funky devices. Today you will find a range of computer speakers that promise acoustic experiences that rival conventional hi-fi systems, affordable MP3 players that let you carry your music wherever you may roam, and soundcards that can transform your computer into a Dolby Digital home theatre system.

The following tests will navigate you through this abundance of audio options to

TESTED

Speakers	48
Soundcards	64
MP3 Players	72

PHOTOGRAPHY: ASHWIN BOOTH, PHOTOCRAFTER, MEXO, XAVIER, JEN GARDIN

FULL VOLUME

Plain-Jane speakers can no longer match today's demanding audio applications. You deserve better!

A good set of speakers not only sounds good, but feels good too. There is nothing that can stir the senses more than a delicately rendered passage of Mozart or, if you are inclined towards gaming, a gunfight where you almost feel the recoil of the shotgun with bullets ricocheting all around you!

No longer are home computers sold just as simple devices for getting your tax work done and managing your weekly expenditures—they are meant to be full-blown entertainment centres. You can use a PC as a massive repository for all your family's music or double it up as a home theatre system for movies on the weekend. Today when you buy a PC, you can easily integrate a home theatre system with it, and that too at a budget.

In this comparison test, we have deliberately not tested any standard stereo speakers. We have only tested speakers that bundle a subwoofer with them. This, we feel, is a critical component in delivering the power and the room-filling sound that is a requisite for today's demanding audio applications and an immersive home theatre experience. The fact that even the most basic 2.1 speaker systems are available for under Rs 2,000 is testament enough that the standard of the audio component for the PC is on the rise, even at the most basic level.

Digit Test Process

We used a Pentium 4 2.4 GHz, on an Intel D850EMV2 motherboard with 256 MB of RDRAM running Windows XP Professional as the test system for evaluating the speakers. Since sound quality depends as much on the soundcard as the output speakers, we used the Sound Blaster Audigy Platinum soundcard for all our tests as it provides a pure audio signal with very little noise. We tested speakers across three categories:

2.1 speaker systems: These speakers feature a front left and front right channel along with the subwoofer channel used for low frequency sound output. At their basic level, however, they are still stereo speakers as they have only two channels of input (the subwoofer channel is derived from the stereo channel).

4.1 speaker systems: These speakers can output four discrete channels of sound—the front left, front right, rear left and rear right speakers along with the subwoofer channel used for producing bass frequencies. These speakers have four channels of input and the bass channel is derived from the front channels.

5.1 speaker systems: These speakers have six discrete channels of audio—the front left, front right, centre, rear left and rear right speakers along with a dedicated subwoofer channel used for handling bass frequencies. They can accept six separate analogue or a digital input channel.

To obtain the purest possible sound without any form of

enhancement, any available equalisation on the speakers was turned off and the volume, bass and treble levels were kept at a fixed 50 per cent throughout, except in the power-handling test, where the volume was raised to its maximum possible setting for evaluating the sound quality at high output levels. The test was run in an isolated room to avoid any external audio disturbance.

Test Methodology

We evaluated the speakers on the basis of features (20 per cent weightage), performance (50 per cent weightage), value for money (20 per cent weightage) and the warranty and support offered (10 per cent weightage).

Features: We awarded points based on the capability and the features of the speakers. We logged technical specifications such as the power rating, frequency response range, the number and type of connectors provided such as S/PDIF, coaxial, optical and any other type of analogue or digital inputs. We also checked whether the speakers adhered to any standards such as Dolby Digital or THX and they were given extra points if they did. Additional accessories such as speaker stands, remote controllers and even longer bundled speaker cables were awarded separate points.

Performance: This was the single most important category as we tested the ability of speaker sets to deliver on their claimed audio performance. Performance was evaluated on the basis of the purity of the sound reproduced by the speakers under various conditions using an array of tests.

a) Sound reproduction quality: We evaluated the performance of the speakers under various applications such as gaming, music and movie playback. The in-game audio tests checked the overall clarity of the speakers while reproducing in-game music along with the other gaming sound effects. We used the retail version of *Quake III Arenav1.30* and *Serious Sam: Second Encounter* for this test. We then tested the ability of the speakers to effectively reproduce surround sound in movie playback. For testing overall surround sound quality, we played a VOB file. This is a file that is encoded with DVD-quality video (usually at a resolution of 720x480) with full support for Dolby Digital audio. Next, we tested the music playback quality using two types of audio files—CD audio and MP3. We used two tracks to evaluate this: 'Freak on a Leash' by Korn and the Hindi track 'Mitwa' from the movie *Lagaan*. Finally, we used a special test Audio CD that contained reference audio files consisting of a cross-section of music and sound effect files. This CD was used to ascertain the response of the speakers to different types of audio and to transient sound effects such as gunshots and explosions.

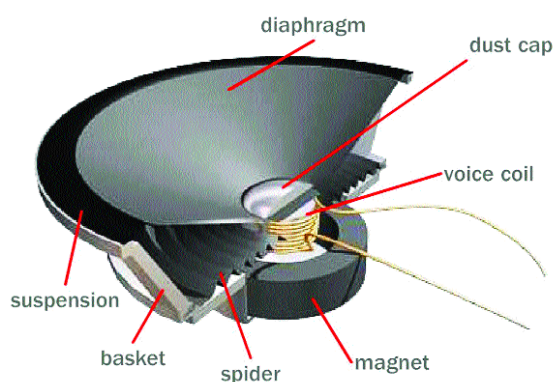
b) Sound frequency test: This test was divided into four parts in which we played four different test tones. Each of these files were in frequencies ranging between a low 30 Hz to a maximum of 15 KHz. Points were given based on the speaker's ability to accurately reproduce the sound in each frequency range.

The Working of a Speaker

At the very heart of every speaker system are the drivers—electromechanical devices that convert electrical signals into sound waves.

The way a speaker works is surprisingly simple:

when a current is applied to the voice coil (suspended by a corrugated component called the spider), which consists of a wire coiled around a metallic tube that surrounds a permanent magnet, the cone of the speaker oscillates and in doing so, it compresses and expands the air immediately in front and behind it. These ripples in the air produce sound waves that we eventually hear. This entire assembly is anchored to a metallic framework called the basket.



c) Power handling test: This test was run to check the power of the speakers in reproducing low and high frequencies at high volumes. We played two MP3 files (one with low frequency sounds and the other with high frequency sounds) with the speaker volume at 100 per cent. The speakers that produced less distortion and crackling were awarded more points.

Value for money: This is a factor of the performance and features offered by the speakers as compared to its price. Therefore, the greater the performance and features and the lower the price, the higher will be the value for money rating of a speaker.

Warranty and support: Here we took into account the warranty period offered by the manufacturer, the number of authorised service centres and the number of cities in which these authorised service centres are present. The information here is as provided by the respective companies.

How they fared

The overall performance of the speakers was evaluated on the basis of four parameters, namely the features, audio performance, warranty and support and value for money. Let's go onto these parameters and see how each of these speaker systems fared.

Features

We evaluated the speakers for the presence of various features such as the number and types of connectors provided on the speaker set, the bundled accessories, thoroughness of the manual and documentation, the inclusion of an amplifier or multi-channel decoder, etc.

The largest variety of speakers is available in the 2.1 speaker cat-

1/2 page Ver. AD

Jargon Buster



Beats: The periodic variations produced in the loudness of a sound. Beats can be heard when two tones of slightly different frequencies are produced at the same time.

Crossover: Most speakers consist of just one full-range speaker cone (driver) that is used to generate all the audio frequencies. However, in speakers that use a Woofer, Squaker and Tweeter, the audio frequencies need to be split and delivered to these specific drivers. The crossover is a circuitry that is integrated into speakers. It splits the audio frequencies before delivering them to the specific drivers—low frequencies are sent to the Woofer, mid-frequencies to the Squaker and high frequencies to the Tweeter.

Decibels: A logarithmic scale of measurement, the decibel is used to indicate the relative loudness of sound.

Dynamic range: The range exhibited by a speaker system in producing very soft and very loud sounds without distortion.

Frequency: It is the number of complete sound waves that pass a point each second and is measured in Hertz (Hz). To put things into perspective, an Audio CD has a maximum output frequency of 20 KHz, which means that it can effectively playback the entire spectrum of sounds audible by humans (the ear can detect frequencies between 20 Hz to 20 KHz).

Frequency response: This is the ability of the speaker system to respond faithfully to a range of frequencies that it is fed with across a frequency spectrum. Ideally, a speaker system should

have a flat frequency response for all frequencies between 20 Hz and 20 KHz as this is the audio range that humans can hear.

LFE: Often confused with the subwoofer channel, LFE (Low Frequency Effects) is a channel of low-frequency audio information in surround sound standards such as Dolby Digital. It contains low frequencies as experienced in sound effects such as explosions, gunshots, thunder, etc. This channel is discrete in the Dolby Digital standard and is the '1' in the 5.1 naming convention. In the absence of a dedicated subwoofer in your home theatre system, the LFE channel would need to be distributed over the other channels. The subwoofer is simply a speaker that is tailored to handle low frequencies and it is therefore paired with the LFE channel in a surround sound system.

Power rating: This is a specification of the maximum power that a speaker utilises during operation. Obviously, the greater this value, the louder the speaker will sound.

Woofers, Tweeters and Squakers: The names of speaker drivers (cones) that are built to reproduce specific frequency ranges. Woofers are low-frequency drivers, Tweeters are high-frequency drivers, while Squakers are mid-range drivers. Speaker systems are generally based on a Woofer-Tweeter or a Woofer-Squaker-Tweeter combination.

egory, from speakers that have a cool and funky design to the purely functional ones without any of the frills and embellishments. The only 2.1 speaker that offered volume control in the form of a convenient in-line controller was the Creative Inspire 2.1 2400. The Sumoku Alpha - 4R was one of the few speakers that came with an external amplifier that houses the volume, bass, treble, mute and the power controls. In fact, even the other two 2.1 speaker systems from Sumoku (Alpha - 5 and Alpha - 6) featured these controls—a definite plus point. Having an external volume control eliminates the need for accessing the volume control in Windows, which can be quite cumbersome. It is also far more convenient to have the volume control on a separate amplifier than on the subwoofer as it gives you the freedom to place the subwoofer anywhere since you don't have to access it. The Sumoku speakers were also the most complete speaker systems in terms of the details and thoroughness of the manuals and documentation.

The Mercury SW480 featured one of the smallest subwoofers in the 2.1 speaker category. It is usually easy to set up a 2.1 speaker system, but this one featured extremely short cables, making it rather difficult to set it up on a table, especially if you have a large monitor and need to place the speakers apart. This was also apparent with the subwoofer—since they are usually placed on the ground, there was a bit of a problem due to the short cable.

A four-channel speaker system is ideally paired with a four-channel soundcard and it would make sense to go in for one of these if you intend to buy such a soundcard in the near future. You can even opt to upgrade to a 4.1 setup if you already possess a four-channel soundcard but are stuck with your old two-speaker setup. Though referred to as 4.1 speaker systems, it is implied that these speakers have discrete Line In connections for the front and the rear stereo channels. The '1' channel is the subwoofer that is derived from the front channels and is not a separate channel.

Interestingly, even though we received some speakers branded as 4.1 surround speakers, they were in fact pseudo 4.1 systems. In reality, they were 2.1 speaker systems that featured a single stereo input that is taken from the Line Out port of your soundcard—the rear inputs were missing altogether. Therefore, even though they have four separate satellite speakers, the rear speakers receive the exact same signal as the front speakers!

The one that stood out in the 4.1 speaker category was the Labtec Arena 530. This four-channel speaker system featured satellites that looked like something straight out of a *Star Trek* studio set—they had an eye-catching design, with curvy, well-moulded grilles and speaker enclosures. Apart from the main volume and the rear volume buttons on the subwoofer, this one also featured the power button and a special button called M3D (Matrix 3D), which helps you simulate four channels from a stereo source.

One of the most feature-rich 4.1 speakers was the Logitech Xtrusio DSR 100. It features discrete inputs for a 4.1 setup and also sports an environmental equalizer knob, which lets you vary the crossover frequency of the subwoofer across two frequencies, namely 100 Hz and 10 KHz. The shape of the subwoofer is far from conventional and the black colour finish and its oval design makes it look striking. This speaker system also features a digital connector in addition to the conventional analogue inputs.

The Creative Inspire 4.1 4400 also provides a very convenient in-line remote control for control-



Logitech Xtrusio DSR 100: A feature-rich 4.1 speaker set

This 2.1 speaker system was one of the few that provided an external amplifier unit that contained the bass, treble, volume and mute controls, making it very convenient to change the different settings.

It featured a 12-watt subwoofer with a pair of 2.5-watt satellite speakers. The speaker set is based on a wooden construction and the subwoofer is especially striking with its bolster-like shape. This speaker system is accompanied with very good docu-



Features	▶ ▶ ▶ ▶ ▶
Performance	▶ ▶ ▶ ▶ ▶
Warranty & support	▶ ▶ ▶ ▶ ▶
Value for money	▶ ▶ ▶ ▶ ▶
OVERALL	▶ ▶ ▶ ▶ ▶

mentation, and for its audio performance, is priced very well at Rs 2,150. It's a good choice for those who have a stereo soundcard and are looking for an upgrade.

The Artis S800 4.1, on the other hand, had no discrete connections for the rear channels. All that was provided was a Line In port, from which the cable connects to the front Line Out port of the soundcard. What's interesting is that the subwoofer itself houses two pairs of ports to connect the rear speakers and front speakers even though the rear channels received the same signal as the front channels. The subwoofer also had a 3D sound switch, which simulates surround sound by adding echoes to the rear speaker output. The other speakers that follow the same pattern of pseudo four-channel sound were the Sumoku Alpha - 7, the Mercury SW 1980 and the Typhoon 5D.

The only other 5.1 speaker to provide a wireless remote control was the Mercury SR-301 F. However, it only featured a volume con-

1/2 page Ver. AD

Artis S880

This quad-channel speaker system features a black wooden finish and sports a very sophisticated workmanship. The subwoofer carries the controls for master volume, subwoofer volume and rear volume along with the power switch. The quick setup guide makes it very simple to install. It was



also one of the few speakers to bundle stands for the satellites making it very simple to place them around the listener for optimum surround imaging. At Rs

4,000, it strikes a good balance between price and audio performance. If you already have a four-channel soundcard or if you intend to buy one, this speaker is a good choice.

Artis S880					
Features					
Performance					
Warranty & support					
Value for money					
OVERALL					

control without any control for audio parameters such as bass and treble. The external amplifier also has buttons for choosing any one of the four preset sound equalization settings, namely rock, classic, jazz and pop. The front panel of the amplifier houses a 3.5 mm socket for connecting a pair of external earphones.

Nowadays, most of the manufacturers have started to provide speaker stands for satellites. The stands impart a good grip to the satellites and provide greater control over the positioning of the satellites. The only 5.1 speaker system that did not feature speaker stands was the Typhoon Acoustic 5.1.

Performance

The truest measure of a speaker's performance is the quality of its sound reproduction with different types of audio signals. Speakers with higher power ratings don't always translate into better sound. For a speaker system to sound good, it should be able to reproduce sounds across the audible frequency range with a flat (constant) response and with the lowest possible distortion across volume levels.

In-game sound quality: In the 2.1 speaker category, the Sumoku Alpha - 4R is a good choice if you like playing games at high volumes—it was very clear even when the volume was turned up to 80 per cent. This was a rare accomplishment compared to the rest of the 2.1 speakers. Also the mid-frequencies were especially well defined.



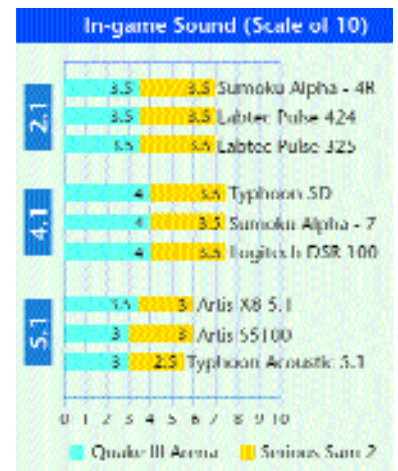
Sound Speakers that do especially well in gaming audio are those that have a good transient response—this type of audio response occurs when there is an extreme change between sound signal levels delivered to the speaker as in the case of gunfire, explosions and thunder.

Other 2.1 speakers that did well here were the two Labtec speakers—the Pulse 424 and the Pulse 325. The only thing that gives the Labtec Pulse 424 an edge over its kin is the higher power rating for the subwoofer and satellites. When

running *Quake III Arena*, the Labtec Pulse 424 was able to output good treble effects and the bass delivered a well-rounded punch when played loud, especially during rocket launcher and machine gun skirmishes. The only problem with this speaker was that at very high volume levels, the treble and mid-ranges were distorted. Even at 50 per cent volume level we could hear a creaking sound from the subwoofer, though this is not loud enough to be immediately apparent. The Sumoku Alpha - 4R, the Labtec Pulse 325 and the Labtec Pulse 424 also sounded pretty good when playing *Serious Sam: Second Encounter*. The gunfire and the background audio track were very sharp even when playing at higher volume levels.

On to the 4.1 speaker systems, the in-game sound quality of the Logitech Soundman Xtrusio DSR 100 was commendable and this was apparent from the defined audio effects and in the reproduction of the background gaming music. Its 52 watt RMS subwoofer thumped with power while playing back the in-game audio effects. But the avid gamer who likes to play games at high volume levels might be disappointed because at higher volume the overall sound quality starts to drop considerably. The other speaker systems that did very well in this test were the Typhoon 5D, the Sumoku Alpha - 7 and the Artis S800.

The speaker that delivered sub-par performance was the Creative Inspire 4.1 4400—the in-game sound effects were not as immersive as the others in this test. This was apparent from the fact that it lacked the power to reproduce the effects of the machine gun fire and the faint echo that is heard when firing the rail gun in *Quake III*.

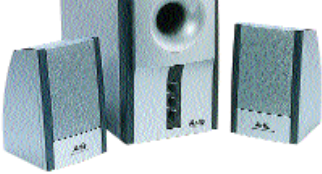


If you want to enjoy the full experience of a Dolby Digital encoded movie DVD and if you also want to be future-ready to play the next generation of games that will support Dolby Digital audio, 5.1 speakers are the only way to go. Here the Artis X8 5.1 sneaks ahead of its partner, the Artis S5100, by a hair's breadth. But there is no question about the power and the sound quality of the Artis X8—while running *Serious Sam: SE*, one could feel the thunderous sound of the spacecraft exploding overhead in the map Sierra de Chiapas. As this game also supports EAX and Direct3D, the overall experience was nothing short of truly immersive! We couldn't wait to find out how a rocket in *Quake III* would sound. After firing up the game, the sound effects of the machine gun and rocket launcher firing was powerful and seemed to hit you right in your gut! The zing of the rail gun was reproduced perfectly, complete with the faint and distant echo that accompanies the firing of this weapon. The Artis S5100 came in a close second to the X8 in terms of overall gaming sound quality as its overall punch of the low frequencies was not as convincing as the X8. If you are heavily into playing games, both these speakers are good choices as they reproduce the audio effects well with the power and clarity that gaming demands.

The 5.1 speaker that trailed in this test was the Mercury SR-301 F; it lost out on fidelity at high volume.

Artis S320

The Artis S320 sports good looks and was one of the few that provided stands for the satellites. The controls for adjusting the main volume, treble and bass levels are provided



Artis S320

Features	▶▶▶▶▶
Performance	▶▶▶▶▶
Warranty & support	▶▶▶▶▶
Value for money	▶▶▶▶▶
OVERALL	▶▶▶▶▶

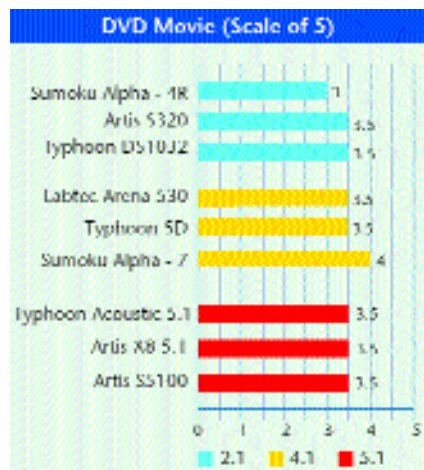
A-

on the subwoofer. This was one of the few speakers in the category that was able to reproduce treble effects with utmost clarity and is a good choice if you prefer to listen to pop and instrumental music. At Rs 2,000, it offers a good choice for a 2.1 speaker system.

Movie sound quality: Even though the 2.1 speakers category essentially comprised of stereo speakers, we tested them for DVD movie playback to ascertain their ability to handle loud and defined audio for voice and stereo panning. While most of the speakers delivered average results, the Typhoon DS1032 and the Artis S320 really stood out in terms of power output. These speakers were able to simulate surround sound even though they are essentially stereo speakers—the panning effect of sound flying from one speaker to another was reproduced very well.

In the 4.1 category, the speakers that delivered especially powerful audio and positioning during movie playback were the Labtec Arena 530 and the Artis S880. The Frontech JIL 1885 didn't do too well, with its very average response in playing back the surround audio. The Sumoku Alpha - 7, the Mercury SW 1980 and the Typhoon 5D were unable to position audio around the listener as they are basically stereo speakers bundled with four satellites.

A 5.1 speaker set can transport you into the middle of a surround sound-rich DVD movie. To test this, we hand-picked some VOB files with an array of pan and fade effects that send sounds flying all around you. For those who like to watch DVD movies at room-shaking volume levels, the answer is the Artis X8—the overall panning and background effects were excellent with this speaker.



One of the VOB files consisted of a camera flyby inside an ice cave: here, the sounds reproduced by the rear speakers were simply stunning. The overall movie experience is further enhanced by the subwoofer's ability to reproduce low frequency sounds faithfully and with the room-thumping power that DVD movies warrant. The

1/2 page Ver. AD

Surround Sound Standards



Dolby Digital (AC-3): The AC-3 (Audio Code number 3) surround sound standard was created by Dolby Laboratories. It delivers five audio channels in addition to a Low Frequency Effects (LFE) channel, which is denoted as 5.1 surround sound. Here, the audio information (in a DVD movie for example) consists of a digital stream of encoded information, which needs to be correctly decoded by an external component—in this case, a Dolby Digital decoder—so that you can hear the separate channels of audio. Once the channels have been split up, they are sent to the corresponding speakers to give you a surround sound experience. Technically, Dolby Digital uses six channels, with 18 bits allocated to each at a sampling frequency of 48 KHz. The first movie to feature a Dolby Digital soundtrack was *Batman Returns*.

Dolby Pro Logic: This is an older standard that packs audio information for a centre and a surround channel into your normal stereo channel. This is far easier to implement compared to Dolby Digital. The main difference here is that there is no discrete left and right channel for the surround audio information—the same surround signal goes to both the surround channels (rear speakers).

DTS: An Acronym for Digital Theatre Systems, this is a standard that was formulated by Steven Spielberg and is a competitor to Dolby Digital. It was first debuted in the movie *Jurassic Park*. It uses a sampling frequency of 96 KHz with 24 bits allocated to each of the six audio channels. There are some DVD movies avail-

able with both Dolby Digital as well as DTS soundtracks encoded.

Dolby Digital EX and DTS ES: These are new surround audio standards that add an additional surround sound channel to the 5.1 picture—the rear centre channel. In the case of Dolby Digital EX, this is done by adding a special type of Dolby Pro Logic decoder to the surround channels and creating one more rear centre channel, thus resulting in 6.1 channel sound. A similar strategy is employed by the DTS ES standard where an additional rear centre channel is supplemented to the two surround channels.

THX: An acronym for Tomlinson Holman's eXperiment, THX is often misunderstood as another surround sound technology. Instead, this is a 'seal of approval' standard that involves certification and approval of the components that go into a home theatre such as amplifiers, video playback equipment, speakers, equalizers, etc. THX aims to ensure that the movie-watching audience experiences the highest standard of audio and video in theatres and home audio-video equipment. There are two other sub-standards to the original THX standard—THX Select and THX Ultra. Among other specifications, these were formulated according to the size of the areas the THX system is to be installed in. THX Select is for installations up to 2,000 cubic feet, while THX Ultra is for installations between 2,000 and 3,000 cubic feet.

Mercury SR-301 F, on the other hand, wasn't able to hold its own—its surround sound quality and power output was relatively poor.

MP3 and Audio CD sound quality: Here, we evaluated the ability of the speakers to play back compressed audio (MP3) and uncompressed audio (Audio CD). Among the 2.1 speakers, the Sumoku Alpha - 4R had no problem reproducing mid and high frequency sounds and the audio was pure and sharp across these

Labtec Arena 530

The Labtec Arena 530 is bound to grab your attention with its subtle contoured body. The overall build quality is very good with the satellites featuring grips so that they remain anchored to your desk even at high volumes.



The system provides a function called Matrix 3D (M3D), which can be activated through a button on the subwoofer and which simulates four channels of audio from a stereo source such as MP3s or Audio CDs. The connecting cables are fairly long, giving you more freedom in placing the speakers. It's priced at Rs 5,999 and gives impressive audio performance.

Labtec Arena 530		B+
Features	►►►►►►►►►►	
Performance	►►►►►►►►►►	
Warranty & support	►►►►►►►►►►	
Value for money	►►►►►►►►►►	
OVERALL	►►►►►►►►►►	

frequency bands. This translated into smooth vocals and sharp definition in instruments such as cymbals and acoustic guitars. While playing English tracks, the Labtec Pulse 424 came out tops. It was able to reproduce bass and treble quite well; this was apparent in the clear and defined bass line and percussions. However, it performed under par when playing back the Hindi CD.

Speakers that fell short of performing well in this test were the Creative Inspire 2.1 2400, the Mercury SW-480 and the Mercury 880—the overall sound lacked clarity and definition and the output was distorted at higher volume levels.

Among the 4.1 speakers, the clear winner was the Artis S800 with very good performance across the board. This was especially apparent from the well-defined bass and the sharp trebles. Another speaker that delivered good fidelity here was the Typhoon 5D. Though this pseudo 4.1 speaker is not suited for surround sound applications, it delivered good response while playing back music.

The Logitech Soundman Xtrusio DSR 100 also performed well with crisp and distortion-free audio at volume levels up to 50 per cent. However, when the overall volume level was increased further, the sound output was distorted and clipped. Another problem was that the subwoofer started to shudder when playing audio that consisted of low frequency sounds, especially at high volumes. However, this speaker system scored well as the music reproduction was very good at normal listening levels (we listened to the audio tracks at 50 per cent volume level). Also of worthy mention here is the Sumoku Alpha - 7 which was also a pseudo 4.1 speaker system but is well suited for music playback.

Among the 5.1 speakers, the Artis X8 once again came out as the top performer. Its bass reproduction was simply stunning. Even as we kept pushing the volume levels higher, the X8 didn't seem



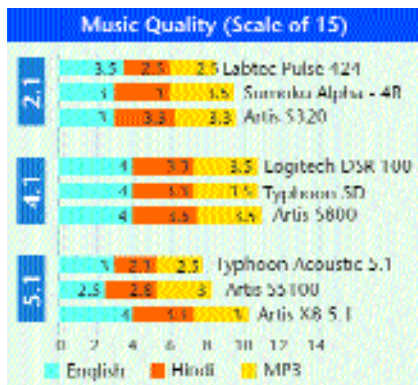
Artis X8 5.1

Supporting a black finish, the first thing that strikes you with this speaker system is its enormous subwoofer. This speaker system has six discrete channels of input and is therefore ideally suited to a Dolby Digital setup. With adequate documentation and a quick setup guide, setting up this speaker system is a simple task. The long cables ensure that there is adequate room for setting up the speakers. Additionally, there is also an infrared remote control provided for controlling volume, mute, bass and treble settings. The front of the subwoofer

Artis X8 5.1	
Features	▶▶▶▶▶▶
Performance	▶▶▶▶▶▶
Warranty & support	▶▶▶▶▶▶
Value for money	▶▶▶▶▶▶
OVERALL	▶▶▶▶▶▶

also features an LED indicator for displaying sound setup. It is priced at Rs 12,000 and if power is what you're looking for, this speaker system definitely fits the bill.

1/2 page Ver. AD



to complain. Even at 80 per cent volume level, the overall sound quality was good and the bass didn't sound flat. However, the vocals sounded a little overpowering while playing Audio CDs. Another area where the speaker was found to be slightly lacking was in the

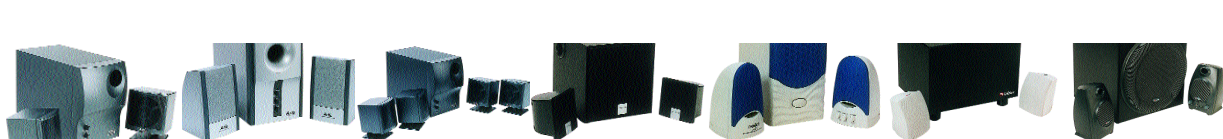
reproduction of high frequency sounds. This however, was remedied with equalisation through the audio playback software.

Special audio test: A good set of speakers should be capable of playing different types of sound as they are going to be used for everything ranging from movies to different genres of music. To evaluate these parameters, we used a special CD that contained a variety of such sounds across 17 audio tracks.

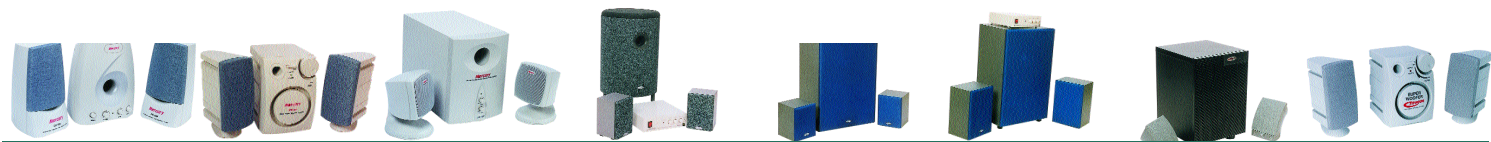
Among the 2.1 speakers, the Mercury SW-980 should get a worthy mention here as it was able to reproduce different background effects such as the chirping of a bird or nuances like breathing noises during songs. The Artis S400 also exhibited good characteristics here—it produced commendable audio effects ranging from gunshots to explosions and thunder. The speaker that did not perform well in this test was the Mercury SW-480. There was loss in clarity and definition while playing back certain subtle sounds.











The 4.1 speakers that stood out were the Artis S880 and the Sumoku Alpha - 7. Here the Artis S880 adequately reproduced background effects with good overall clarity. Especially impressive was the reproduction of sounds such as thunder, gunshots, etc.





CATEGORY	Artis S100	Artis S320	Artis S400	Creative Inspire 2.1 2400	Frontech JIL 2002	Labtec Pulse 325	Labtec Pulse 424
Features							
Speaker Specifications							
Physical Dimensions (LxWxH, in cm)							
Subwoofer	15 x 27 x 20.7	26.5 x 14 x 21.5	26.5 x 15 x 20	19.2 x 19.2 x 21.1	22 x 16 x 25	18 x 23 x 15	25 x 23 x 23
Satellites	9.2 x 9.7 x 9	11.5 x 10 x 15	10 x 9 x 9	9.5 x 9.5 x 8.7	14 x 11 x 18	6 x 7 x 8	7.5 x 7 x 12.5
Centre	NA	NA	NA	NA	NA	NA	NA
Power Rating (RMS)							
Subwoofer	NA	NA	NA	12	NA	5	20
Satellites (Front/Rear)	NA	NA	NA	4.5	NA	2.5	6
Centre	NA	NA	NA	NA	NA	NA	NA
Frequency response range	40 Hz - 18 KHz	40 Hz - 18 KHz	40 Hz - 18 KHz	42 Hz - 20 KHz	NA	40 Hz - 20 KHz	35 Hz - 20 KHz
Amplifier/Dolby Digital	✓ X	✓ X	✓ X	✓ X	✓ X	✓ X	✓ X
Decoder							
Connectors							
Front	✓	✓	✓	✓	✓	✓	✓
Rear	X	X	X	X	X	X	X
Centre/Subwoofer	X	X	X	X	X	X	X
Coaxial	X	X	X	X	X	X	X
DIN	X	X	X	X	X	X	X
S/PDIF	X	X	X	X	X	X	X
Optical	X	X	X	X	X	X	X
Speaker Controls (Vol, Bass, Treble, Mute, Balance, Rear Vol)	Vol, Bass	Vol, Bass, Treble	Vol, Bass	Vol, Bass	Vol, Bass	Vol	Vol, Bass
Bundled Accessories							
Power Adapter	✓	✓	✓	✓	✓	✓	✓
Speaker Stands	✓	✓	✓	X	X	X	X
Remote Control/Wireless	X	X	X	✓/X	X	X	X
Manual & documentation (Y/N)							
Listing of specifications	✓	✓	✓	X	X	X	X
Quick setup guide	✓	✓	✓	X	X	✓	✓
Troubleshooting	X	X	X	X	X	X	X
Contact information for after-sales support	X	X	X	X	X	X	X
Performance							
Sound Quality Tests							
On-game Sound (Scale of 5)							
Quake III Arena (Map: The Longest Yard)	2.5	3	1.5	2.5	3	3.5	3.5
Serious Sam 2 (Map: Sierra de Chiapas)	3	2.5	2	2.5	3	3.5	3.5
DVD Movie (Scale of 5)	2.5	3.5	2.5	2.5	2.5	3	3
Music Quality (Scale of 5)							
English Audio CD	3	3	2.5	2	2.5	2.5	3.5
Hindi Audio CD	2.8	3.3	3	2.8	2.3	2.8	2.5
MP3	2.5	3.3	2.5	2	2.5	2.8	2.5
Special Audio Test Files (Scale of 5)	2.88	2.88	3.15	3.00	2.65	3.09	3.06
Sound Frequency Test (Scale of 5)							
20 Hz	2.5	4.5	4	5	4.5	4.5	3.5
50 Hz	4.5	4.5	3.5	3.5	4.5	4.5	3.5
10,000 Hz	4	4	4	4	4.5	4	4
5,000 Hz	4	4.5	4	4	4.5	4	4
Power Handling Test (Scale of 5)							
Ultimate Bass Test	2.5	2.5	2	2	3	4.5	3
Ultimate Treble Test	3	4.5	3	3	3	4.5	3
Warranty & Support							
Number of authorised service centres	2	2	2	18	12	15	15
Number of cities where service centres are present	8	8	8	18	12	15	15
Period of warranty (months)	12	12	12	12	12	12	12
Overall Score							
Features (20%)	9.31	9.98	9.31	6.65	5.32	5.32	6.65
Performance (50%)	38.70	44.29	37.91	35.78	38.57	43.23	40.70
Warranty & Support (10%)	4.00	4.00	4.00	5.32	5.32	5.32	5.32
Value for Money (20%)	8.63	9.88	6.29	5.05	5.78	8.06	3.24
Overall Product Rating	60.64	68.14	57.51	52.80	54.99	61.93	55.91
Overall Grade	B+	A+	B	B-	B	B+	B
Vendor name	Kunhar Peripherals Pvt Ltd	Kunhar Peripherals Pvt Ltd	Kunhar Peripherals Pvt Ltd	Compuage Infocom Ltd	Jupiter Infosys India Ltd	Aditya Infotech Ltd	Aditya Infotech Ltd
Phone	022-2345758	022-2345758	022-2345758	022-8305500	022-2001211	022-6338555	022-6338555
E-mail	salesbom@kunhar.com	salesbom@kunhar.com	salesbom@kunhar.com	info@compuageindia.com	frontech@bom5.vsnl.net.in	aditya_mmb@adityagroup.com	aditya_mmb@adityagroup.com
Price (In Rupees)	2,000	2,000	2,600	2,818	2,600	2,149	4,499










2.1 SPEAKERS							
Mercury 880	Mercury SW-480	Mercury SW-980	Sumoku Alpha - 4R	Sumoku Alpha - 5	Sumoku Alpha - 6	Typhoon DS1032	Typhoon Superwoofer
17 x 16 x 21	13 x 11 x 15	26 x 15 x 20	23 x 23 x 40	29 x 21 x 44	29 x 21 x 44	19 x 20 x 25	19 x 20 x 25
15 x 11 x 20.5	11 x 7 x 13.5	11 x 9 x 14	9 x 9 x 12.5	15 x 12 x 21	15 x 12 x 21	10 x 8 x 13	10 x 8 x 13
NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	12	15	15	20	NA
NA	NA	NA	2.5	4.5	7.5	5.5	NA
NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	50 Hz - 18 Khz	50 Hz - 18 Khz	50 Hz - 18 Khz	18 Hz - 20 Khz	NA
✓ x	✓ x	✓ x	✓ x	✓ x	✓ x	✓ x	✓ x
✓	✓	✓	✓	✓	✓	✓	✓
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
Vol, Bass, Treble	Vol	Vol, Bass	Vol, Bass, Treble, Mute	Vol, Bass, Treble, Mute	Vol, Bass, Treble, Mute	Vol, Bal	Vol
✓	✓	✓	✓	✓	✓	✓	✓
x	✓	✓	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	✓	✓	✓	x	x
x	x	x	✓	✓	✓	x	x
x	x	x	✓	✓	✓	x	x
x	x	x	✓	✓	✓	x	x
2.5	2.5	3	3.5	2	3	3.5	2.5
2.5	2	3	3.5	2	3	2.5	2
3	2.5	3	3	2.5	2.5	3.5	2.5
2	2	3	3	2.5	2	2.5	2.5
2.3	2.5	2.8	3	2.5	2.3	2.8	2.5
2	2	2.5	3.5	2.5	2.5	2.5	2.5
2.50	2.26	3.21	3.00	2.50	2.38	2.62	2.56
4.5	0	4.5	4.5	0	0	3.5	4.5
4	3	4.5	4.5	3	3.5	4	3
4.5	3.5	4.5	4	3.5	3.5	4	4
4.5	3.5	4.5	4	3.5	3.5	4	4
2.5	2.5	2	3.5	2	2.5	2.5	1.5
3.5	2	4.5	4.5	3	3.5	3.5	2.5
2	2	2	5	5	5	7	7
4	4	4	5	5	5	7	7
12	3	12	12	12	12	12	12
							
5.99	5.99	6.65	11.97	11.97	11.97	5.32	4.66
36.04	29.79	42.03	44.82	32.72	33.12	38.97	35.11
4.00	1.33	4.00	4.00	4.00	4.00	4.00	4.00
13.64	18.09	13.44	9.59	6.01	4.66	4.97	17.30
59.66	55.20	66.12	70.38	54.70	53.75	53.26	61.06
							
Kobian India Pvt Ltd	Kobian India Pvt Ltd	Kobian India Pvt Ltd	Palesha Electronics Industries	Palesha Electronics Industries	Palesha Electronics Industries	Hitech Computers	Hitech Computers
080-5566626 rohit@kobian.com	080-5566626 rohit@kobian.com	080-5566626 rohit@kobian.com	9520-6355702 palesha@vsnl.com	9520-6355702 palesha@vsnl.com	9520-6355702 palesha@vsnl.com	022-4927323 bom@hitechit.com	022-4927323 bom@hitechit.com
1,150	750	1,350	2,150	2,560	3,200	2,980	870



CATEGORY	4.1 SPEAKERS						
	Artis S800	Artis S880	Creative Inspire 4.1 4400	Frontech JIL 1855	Labtec Arena 530	Logitech Soundman Xtrusio DSR 100	Mercury SW 1980
Features							
Speaker Specifications							
Physical Dimensions LxWxH, in cm)							
Subwoofer	30 x 10 x 23.5	28 x 17 x 23.5	21.1 x 19.1 x 19.2	26.5 x 15 x 20	19 x 19 x 22	18.5 x 27.5 x 30.5	26.5 x 15 x 20
Satellites	8.5 x 9.5 x 9.5	9 x 10 x 11.5	8.7 x 9.5 x 9.5	11 x 8 x 11	10 x 10 x 14	8 x 7.5 x 5	9 x 8.5 x 13
Centre	NA	NA	NA	NA	NA	NA	NA
Power Rating (RMS)							
Subwoofer	NA	NA	17	NA	15	52	24
Satellites (Front/Rear)	NA	NA	6	NA	4	12	6
Centre	NA	NA	NA	NA	NA	NA	NA
Frequency response range	40 Hz - 18 KHz	40 Hz - 18 KHz	40 Hz - 20 KHz	30 Hz - 20 KHz	40 Hz - 20 KHz	28 Hz - 20 Khz	NA
Amplifier/Dolby Digital Decoder	✓ ✗	✓ ✗	✓ ✗	✓ ✗	✓ ✗	✓ ✗	✓ ✗
Connectors							
Front	✓	✓	✓	✓	✓	✓	✓
Rear	✗*	✓	✓	✓	✓	✓	✗*
Centre/Subwoofer	✗	✗	✗	✗	✗	✗	✗
Coaxial	✗	✗	✗	✗	✗	✗	✗
DIN	✗	✗	✗	✗	✗	✓	✗
S/PDIF	✗	✗	✗	✓	✗	✓	✗
Optical	✗	✗	✗	✗	✗	✗	✗
Speaker Controls (Vol, Bass, Treble, Mute, Balance, Rear Vol)	Vol, Bass	Vol, Bass, Rear Vol	Bass	Vol, Bass	Vol, Rear Vol	Balance	Vol, Bass
Bundled Accessories							
Power Adapter	✓	✓	✓	✓	✓	✓	✓
Speaker Stands	✓	✓	✗	✗	✓	✗	✓
Remote Control/Wireless	✗	✗	✓/✗	✗	✗	✓/✗	✗
Manual & documentation (Y/N)							
Listing of specifications	✓	✓	✗	✗	✗	✓	✗
Quick setup guide	✓	✓	✗	✗	✓	✓	✗
Troubleshooting	✗	✗	✗	✗	✗	✓	✗
Contact information for after-sales support	✗	✗	✗	✗	✗	✓	✗
Performance							
Sound Quality Tests							
In-game Sound (Scale of 5)							
<i>Quake III Arena</i>	3.5	3	2.5	2.5	2.5	4	3
<i>(Map: The Longest Yard)</i>							
<i>Serious Sam 2</i>	4	3	2	2.5	3	3.5	3
<i>(Map: Sierra de Chiapas)</i>							
DVD Movie (Scale of 5)	3.5	3.5	3	2	3.5	3	2.5
Music Quality (Scale of 5)							
English Audio CD	4	3.5	2	3	3.5	4	3
Hindi Audio CD	3.5	3.5	2.3	3	3.5	3.3	2.5
MP3	3.5	3.5	2.5	2.5	3	3.5	3
Special Audio Test Files (Scale of 5)	3.06	3.41	2.88	2.74	3.00	3.06	3.06
Sound Frequency Test (Scale of 5)							
20 Hz	0	3.5	3.5	3	5	4.5	4.5
50 Hz	3.5	4.5	4.5	2.5	4.5	4.5	4
10,000 Hz	3.5	4	4	4	4	4.5	4.5
15,000 Hz	3.5	4	3.5	4	4	0	4.5
Power Handling Test (Scale of 5)							
Ultimate Bass Test	3	3	2.5	3	4.5	2.5	2.5
Ultimate Treble Test	4.5	4.5	3	3	4.5	2.5	3.5
Warranty & Support							
Number of authorised service centres	2	2	18	12	15	25	2
Number of cities where service centres are present	8	8	18	12	15	25	4
Period of warranty (months)	12	12	12	12	12	12	12
Overall Score							
Features (20%)	9.31	11.31	7.32	7.98	9.31	14.63	6.65
Performance (50%)	40.30	46.68	36.58	34.45	45.89	43.36	38.57
Warranty & Support (10%)	4.00	4.00	5.32	5.32	5.32	4.00	4.00
Value for Money (20%)	5.23	4.83	3.16	10.34	2.71	0.97	7.25
Overall Product Rating	58.84	66.81	52.37	58.08	63.23	62.95	56.47
Overall Grade	B	A-	B-	B	B+	B+	B
Vendor name	Kunhar Peripherals Pvt Ltd	Kunhar Peripherals Pvt Ltd	Compuage Infocom Ltd	Jupiter Infosys India Ltd	Aditya Infotech Ltd	Rashi Peripherals	Kobian India Pvt Ltd
Phone	022-2345758	022-2345758	022-8305500	022-2001211	022-6338555	022-8260258	080-5566626
E-mail	salesbom@kunhar.com	salesbom@kunhar.com	info@compuageindia.com	frontech@bom5.vsnl.net.in	aditya_mmb@adityagroup.com	ho@rptechindia.com	rohit@kobian.com
Price (In Rupees)	3,200	4,000	4,255	1,500	5,999	12,000	2,200

Disclaimer: * Pseudo-4.1 speakers (four satellites, but they only have front stereo inputs)

			5.1 SPEAKERS			
Sumoku Alpha - 7	Typhoon 5D	Typhoon Acoustic 4.1	Artis 55100	Artis X8 5.1	Mercury SR-301 F	Typhoon Acoustic 5.1
29 x 21 x 44	23 x 22 x 30	20 x 19 x 25	30.5 x 16.5 x 26	45 x 19 x 35	17 x 17 x 24	28 x 17 x 23.5
15 x 12 x 21	10 x 9 x 9.5	9 x 8 x 12	10 x 8 x 8	10 x 11.5 x 16	13 x 7.5 x 15	9.5 x 8 x 12
NA	NA	NA	10 x 8 x 8	10 x 11.5 x 16	10 x 8 x 16	9.5 x 8 x 12
16	NA	20	NA	NA	NA	20
3	NA	4	NA	NA	NA	16
NA	NA	NA	NA	NA	NA	16
50 Hz - 18 KHz	100 Hz - 20 KHz	48 Hz - 20 KHz	30 Hz - 20 KHz	40 Hz - 18 KHz	NA	30 Hz - 18 KHz
✓ ✗	✓ ✗	✓ ✗	✓ ✗	✓ ✗	✓ ✗	✓ ✗
✓	✓	✓	✓	✓	✓	✓
✗*	✗*	✓	✓	✓	✓	✓
✗	✗	✗	✓	✓	✓	✓
✗	✗	✗	✗	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗
Vol, Bass, Treble, Mute	Vol, Bass, Treble, Rear Vol	Vol, Rear Vol	Vol, Bass, Rear Vol	Vol, Bass	Vol	Vol, Bass, Rear Vol
✓	✓	✓	✓	✓	✓	✓
✗	✓	✓	✓	✓	✓	✗
✗	✗	✗	✗	✓/✓	✓/✓	✗
✓	✗	✗	✓	✓	✗	✗
✓	✗	✗	✓	✓	✗	✗
✓	✗	✗	✗	✗	✗	✗
✓	✗	✗	✗	✗	✗	✗
4	4	2.5	3	3.5	2	3
3.5	3.5	2.5	3	3	2	2.5
3.5	3.5	3	3.5	3.5	2	3.5
4	4	2.5	2.5	4	2	3
3	3.3	2	2.8	3.3	2.3	2.3
3.5	3.5	3	3	3	2	2.5
3.12	2.88	2.47	3.06	2.88	2.76	2.35
4	2.5	4	4	5	0	2.5
3.5	3.5	4	3.5	4	3.5	2.5
4	3.5	4	4	4	3.5	3.5
4	2.5	4	4	4	3.5	3.5
3.5	1.5	2.5	3.5	4.5	2	2.5
4.5	2	3	3.5	4.5	3.5	2.5
5	7	7	2	2	2	7
5	7	7	8	8	4	7
12	12	12	12	12	12	12
11.97	9.31	7.98	11.31	14.63	11.31	8.65
42.56	41.90	36.97	41.76	45.89	31.12	34.85
4.00	4.00	4.00	4.00	4.00	4.00	4.00
4.55	5.05	2.23	2.30	1.05	2.57	2.82
53.08	60.26	51.18	59.36	65.56	48.99	50.31
						
Salesha Electronics Industries	Hitech Computers	Hitech Computers	Kunhar Peripherals Pvt Ltd	Kunhar Peripherals Pvt Ltd	Kobian India Pvt Ltd	Hitech Computers
9520-6355702	022-4927323	022-4927323	022-2345758	022-2345758	080-5566626	022-4927323
salesha@vsnl.com	bom@hitechit.com	bom@hitechit.com	salesbom@kunhar.com	salesbom@kunhar.com	rohit@kobian.com	bom@hitechit.com
3,950	3,400	5,625	6,500	12,000	4,800	4,590

The Labtec Arena 530 4.1 speaker performed well here too. There was minimal distortion at the maximum volume level. This means if you really like low frequency response, it would be a good idea to go in for this speaker system. However, one glaring disadvantage is that the Labtec Arena shudders quite a lot while playing low frequency sounds at considerably higher volume levels. Coming in a very close second was the Sumoku Alpha - 7—in spite of being a pseudo four-channel speaker system, this one exhibited very commendable power handling capabilities. The other speakers that performed well in playing back high frequencies at high volumes turned out to be the Artis 800 and the Artis 880. One of the speakers that was really battered in the ultimate bass test was the Typhoon 5D. It exhibited a very high amount of distortion and the overall sound quality was exceedingly noisy. The Logitech Soundman Xtrusio DSR 100 also performed poorly here as its sound quality fell drastically once the volume levels were raised beyond the 60 per cent mark.

The undisputed winner among the 5.1 speakers was once again the Artis X8. We expected an overall distorted sound but the X8 was able to hold its own and play both the ultimate bass test and the ultimate treble test file with minimum distortion. If you like playing songs and movies at the highest volumes possible, the Artis X8 should be your pick. On the other hand, the Typhoon Acoustic 5.1 was audibly stretched under the stress of the power-handling test. It generated a lot of distortion when playing at maximum volume levels—we could hardly hear any vocals while the sound file was being played at the maximum volume.

Warranty and support

In terms of the product warranty and service infrastructure,

Decision Maker				
You need	To play music and day-to-day work		Surround gaming and home theatre	
Look for	Stereo speakers that have a good frequency response, decent power and accessible volume controls		Support for at least four discrete channels (ideally 5.1), good transient response, separate inputs for front and rear channels (stay away from pseudo four-channel speakers), adequate power for reproducing movie audio effects like gunshots and explosions	
The models	Price-conscious	Performance	Price-conscious	Performance
	Typhoon DS1032, Mercury SW-980	Artis S320, Sumoku Alpha - 4R	Artis S880, Logitech Soundman Xtrusio DSR 100	Artis X8 5.1, Labtec Arena 530
Price range	Rs 800 to Rs 1,400	Rs 2,000 to Rs 2,200	Rs 4,000 to Rs 12,000	Rs 6,000 to Rs 12,000

there is a wide variation among the brands. The most comprehensive after-sales support and coverage is by Logitech, which has 25 service centres over the same number of cities. Coming in a close second is Creative with 18 service centres in the same number of cities and Labtec with 15 service centres in 15 cities.

The brands that are lacking in service support are Mercury, Artis, Typhoon and Sumoku. Mercury has just two service centres each in four cities. Though Artis has authorised dealerships in eight cities, it has authorised service centres in just two of these. Typhoon has service centres in seven cities, while Sumoku has only five.

What it all leads to

Sound for your computer has truly evolved over the past year, where it is now being given the importance it is due. In the face of applications that are more demanding on the audio performance of your PC such as MP3 audio and DVD, you will never really be satisfied with the plain-Jane stereo speakers. Let's take a look at the speakers that lived up to these new age applications.

Buying Tips


Power rating: Always go by the RMS power rating of a speaker system rather than the Peak Music Power Output (PMPO). RMS is the true technical measure of a speaker's capability to handle continuous power. For your computer-based surround speaker system, a rating of 40 watts RMS is a good place to start.

Frequency response: If your speaker system has a frequency range that is limited at the upper end (if it cannot perform above 16 KHz, for example), you will not hear any of the high trebles and will lose definition in your music, especially if you listen to a lot of classical music. Similarly, if your speaker system cannot go below 50 Hz, it will not be able to correctly reproduce the low frequencies such as bass drums and explosions in movies.

Stands: When buying 2.1 speakers primarily for music playback, you wouldn't need speaker stands as you would most probably place them directly on your desktop. However, for a 4.1 or 5.1 speaker system, ensure that each satellite has a base or a stand. This is useful for placing them behind you on a wall or even standing on the floor at ear-level for proper surround sound imaging.

Controls: Speakers with an in-line volume control give you the freedom to control the master speaker volume without having to reach troublesome locations like the subwoofer where the volume controls are generally placed.

Audio inputs: If you have a standard 2.1 stereo speaker system, you only need standard analogue left and right channels. However, in the case of a four-point surround sound system, look out for four separate channels of analogue audio inputs to your speaker system. This would be in the form of two 3.5 mm stereo inputs (left/right for front and left/right for rear) or four separate RCA inputs. Also watch out for pseudo four-channel speakers—these are basically just stereo speakers. In the case of 5.1 speakers, you would need either six separate RCA inputs for the discrete AC-3 channels (if the signal is already being decoded by an external decoder like the Sound Blaster Live! 5.1 DE soundcard) or a DIN connector that is fed by the digital output of your soundcard in order to have true Dolby Digital compliance.



2.1 speaker systems

Among the stereo 2.1 speaker systems, the one that stood out in terms of sheer performance was the **Sumoku Alpha - 4R**, which bagged our Best Performance Award. With very definitive gaming performance, this speaker system is ideal if you want to hear the tinker of the machine gun shells as they fall around you.

The Best Value Award in this category goes to the **Mercury SW-480**. Featuring one of the most compact subwoofers in its category, this speaker delivers acceptable performance at a surprisingly low price of Rs 750, making it a good choice if you want a subwoofer-satellite stereo speaker system.

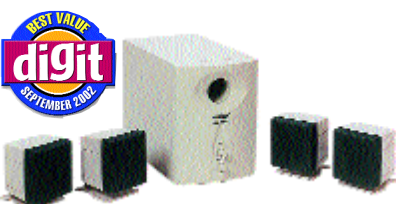


Mercury SW-480: Decent performance at a great price

4.1 speaker systems

The 4.1 speaker that bagged the Best Performance Award was the **Artis S880**. This all-black speaker system stood out for its superior sound quality in gaming, as well as the movie tests where it provided powerful and well-defined sound. It was also able to handle high volume levels with ease and should be your choice if you like to 'bring the house down'.

The **Frontech JIL 1855** bagged the award for Best Value in this segment with its very competitive price of Rs 1,500 while still providing all the functionality of a 4.1 speaker system.



Frontech JIL 1855: Powerful quad-channel support at a good price

5.1 speaker systems


Among the 5.1 speaker systems, the one that stood out was the **Artis X8 5.1**. It delivered stellar performance in nearly all the tests and exhibited the power to withstand any amount of strenuous audio applications you could care to throw at it. It wins the Best Performance Award.

The **Typhoon Acoustic 5.1** bagged the Best Value Award in this category. This system provides complete support for surround sound standards



Typhoon Acoustic 5.1: Compact, powerful and AC-3 capable

such as Dolby Digital or DTS and is priced very well at Rs 4,590, making it an ideal choice for those making their first foray into the world of true surround sound on their PC.

Catering to a varied array of needs and budgets, today's computer speaker systems have the mettle to deliver the performance required for immersive audio on your computer; it is only a matter of time before other high-performance standards such as THX reach your desktop PC. Until then, pump up the volume! 

YATISH SUVARNA and MARCO D'SOUZA

1/2 page Ver AD

SOUND MAKERS

PCs no longer play little whooshes and tinkles. New-age entertainment applications such as DVDs and next-generation games provide a total surround sound experience... if your soundcard supports it

The thought that a bland, beige box that at best beeped an error at you through an internal speaker, would one day evolve into every audiophile's dream sound machine was unimaginable. Yet within a span of 10 years, the PC has gone from beeps and now proudly offers Dolby Digital surround sound in all its 5.1-channel glory. This mini-revolution has been headed by the unassuming soundcard that can be found nesting inside most computer systems.

A few years back, a musician would have been forced to buy a sound system that ran into lakhs of rupees. Now, thanks to the evolution of the soundcard and the introduction of features such as wavetable synthesis, 24-bit recording depth at 96 KHz, digital input and output connectors, a computer and a good soundcard will let you create professional music at an affordable price. The computer has also become the primary source of entertainment, replacing both the TV and the silver screen. Armed with the right soundcard, it can deliver theatre-quality movies in the comfort and convenience of your home. And if you enjoy playing computer games, the experience has never been better.

We approached this test with the intention of suggesting the best sound solution to suit your needs. We tested six soundcards that were available in the market. Also, as newer motherboards now come with in-built sound support that offers above average audio quality, we included two motherboards with integrated sound chipsets in our tests.

Digit Test Process

The test system consisted of an Intel Pentium 4 2.53 GHz processor on an Intel 845GBV motherboard, along with 256 MB of DDR SDRAM and an 8 GB (5,400-rpm) hard disk. All sound tests were conducted under Windows XP Professional.

As the speakers can affect the sound quality, we chose the most appropriate speakers for each card. Thus for those that supported 2.1-channel output we used Labtec Pulse 424 2.1 speakers. For both 4.1 channel and 5.1 channel soundcards Creative DTT 2500 Digital, (5.1 speakers) was used. By choosing the best speaker set for each card, we hoped to eliminate the speakers as a potential bottleneck.

Digit Test Methodology

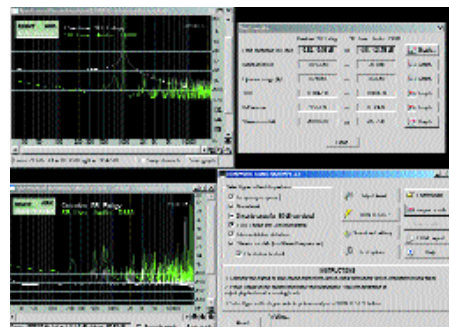
We evaluated each soundcard both in terms of what it can theoretically deliver and what it actually offers. We evaluated the different soundcards on performance (40 per cent weightage), features that they sport (30 per cent weightage), warranty and support (10 per cent weightage) and value for money (20 per cent weightage).

Features: Certain features should be looked for before purchasing a soundcard, such as the number of channels it supports, whether it is compatible with the major sound APIs and the build quality of both the card and the cables that accompany it. A card was awarded points based on these criteria.

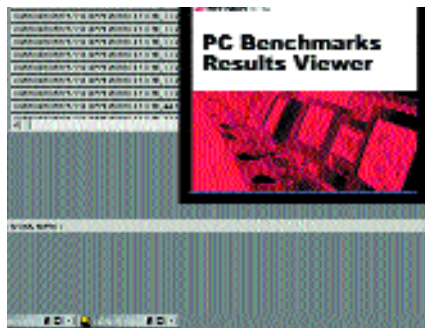
Performance: We defined the performance of a soundcard based on both subjective and analytical tests. The subjective tests evaluated the card for the music quality while playing audio CDs and the sound quality in games. Even the best soundcards stress the CPU to some extent. We used both a game and a benchmark tool to determine the impact that a soundcard might have on CPU utilisation. Finally, RightMark Audio Analyzer (RMAA) was used to determine the technical performance of a soundcard.

a) Sound quality: This was a subjective test to ascertain the performance of a card while handling both music and games. We played four different music tracks—two Hindi and two English. This helped us access the ability of a soundcard to reproduce different musical tones and notes. To determine the sound quality that a soundcard delivers under a game, we chose *Quake III Arena* (map DM9). We ran the game with High Quality sound enabled and at 1024x768 with 32-bit colour and texture depth.

b) CPU utilisation: We used *Quake III Arena* to ascertain the stress a soundcard puts on the CPU while playing back High Quality audio. We used an in-game pre-recorded demo (Demo Four) and noted the fps count under Normal and High Quality sound settings. The screen resolution was kept at 1024x768x32. We also used 3D Audio WinBench, which is an effective test that gives



The RightMark Audio Analyzer was used to determine the technical performance of a card



3D Audio WinBench was used to measure the CPU utilisation of each soundcard

the percentage of system resources that a soundcard consumes while it processes and outputs sound at 16 bit and 22 KHz frequency.

c) **Technical test:** RMAA (version 3.4) is an exhaustive test for a soundcard. This suite runs five subtests, namely, Frequency response, Signal-to-Noise level, Dynamic range, THD + Noise and Stereo Cross talk.

Warranty and support: Here we took into account the warranty period for the soundcards, the number of authorised service centres appointed by the companies and the number of cities in which authorised service centres are present. The information here is as provided by the respective companies.

Value for money: This provides us with a price-performance ratio. A card offering good performance at a great price will score higher than one offering excellent performance with a hefty price tag.

How they fared

We tested all the major soundcards that are available in the market today. Products from Creative Labs dominated our test lineup with five out of the six cards coming from their stables; the other card was provided by Zoltrix. We also tested two integrated sound chipsets—these reside on the motherboard and are an ideal solution for those on a budget.

Features

The number of output channels supported by a soundcard is an extremely important feature to keep in mind while making a purchase, as this cannot be upgraded or modified. The price of 2.1 and 4.1 speaker sets has come down drastically and games and movies are a joy to experience on these multi-speaker sets. The Creative Vibra 128 was the only soundcard that did not support more than a 2.1 speaker set, while the remaining supported either 4.1 or 5.1 speakers. Older cards had a built-in amplifier that created distortion and caused loss in the purity and clarity of the

sound output (this was a necessary evil as most speaker sets those days were non-amplified). All newer soundcards provide a non-amplified, pure output to the speakers with only the Vibra 128 still amplifying its line-out and MIDI jacks.

For a theatre-like audio experience, a soundcard should support Digital Dolby 5.1 decoding. Unfortunately, this feature is only available in Creative's Audigy Platinum, Sound Blaster Live! DE 5.1 and Extigy solutions.

Although not an issue for a majority of users, the nature of drivers available for those using niche operating systems such as Linux and Windows 3.1 can be a point of concern. Without the proper drivers, users will get sound of questionable quality.



Solutions for the Musician

Some cards only have FM synthesizers and these should be considered a bad choice to create quality music. A musician should buy a soundcard that features Wavetable support and optionally supports the SoundFont technology (see www.soundfont.com for more information). Finally, if you wish to reduce signal loss, make sure that your soundcard has two things: gold-plated connectors and an S/PDIF connection port, along with the requisite cables.

Jargon Buster



Duplex: A full-duplex soundcard can make and receive sounds at the same time. A full-duplex soundcard is thus essential if you intend to use telephony over the Internet. For instance, walkie-talkies are half-duplex, while telephones are full-duplex.

MIDI Channels: These channels offer a musician greater control over the instruments connected to the soundcard. He can set them all to respond to different channels and therefore have independent control over each one.

Polyphony: Is the maximum number of voices a synthesiser can play at any one time. A soundcard functions around a Digital Signal Processor (DSP) that mixes sound samples from the on-board wavetable to produce the requisite musical notes. The maximum number of notes available is dependent on the processing power available in the DSP and is referred to as the card's 'polyphony'.

Recording/Playback Depth and Rate: In order to store sound in digital form, its waveform is converted into a series of bits via a process called sampling. A higher sampling rate will give a more accurate digital representation of the sound. The maximum sampling rate at which a sound signal can be recorded by a soundcard is called the recording rate of the card; the higher this value, the better the recording. Similarly, a higher playback rate will give better sound quality. The clarity and fidelity of the sound sample improves with the number of bits used to describe it. Thus, a 16-bit sample recorded at 24 KHz sampling rate will have less clarity than a 24-bit sound sample recorded at a rate of 96 KHz.

Signal-to-Noise Ratio (SNR): SNR is the ratio of the largest sound signal that can be handled by a card with minimum distortion, to the noise that is present at that time. It thus tells us how 'cleanly' the card in question produces sound.

Sony/Philips Digital Interface (S/PDIF): It is a standard for transmitting data in a lossless digital format to preserve sound quality. Soundcards that feature an S/PDIF connector are thus a better choice.

Stereo Cross talk: Cross talk is the mixing of the left and the right-channel sound information. The effect being, when listening to a set of stereo speakers (or headphones), the left ear can hear sounds meant for the right speaker, and the right ear can hear some of the audio coming from the left speaker. A well-engineered soundcard (one with gold-plated connectors and shielded wires, for instance) will suppress this interference and produce a more accurate sound.

Total Harmonic Distortion (THD): Non-linear distortion is a processing error that creates output signals at frequencies that are not necessarily present in the input. THD is determined by measuring the size of each of the new frequencies that are created by the source of the distortion and then taking their geometric sum.

Wavetable: A Wavetable stores the digitised samples of actual recorded instruments, which are then combined during music creation and playback. They are commonly used by professionals to synthesise music.

Sound APIs



Games today demand an interactive experience by definition. When a character speaks in a game, its voice should pan around the listener depending on the position of the speaker, or a gunshot should sound different in a closed room as compared to an open space. These demands have led soundcard manufacturers and game developers to produce and use what are known as sound APIs. A game would call on the soundcard and with the help of the necessary API it would deliver the requisite effect. If a soundcard supported DirectSound, it was labeled accordingly and the same logic extends to the other APIs.

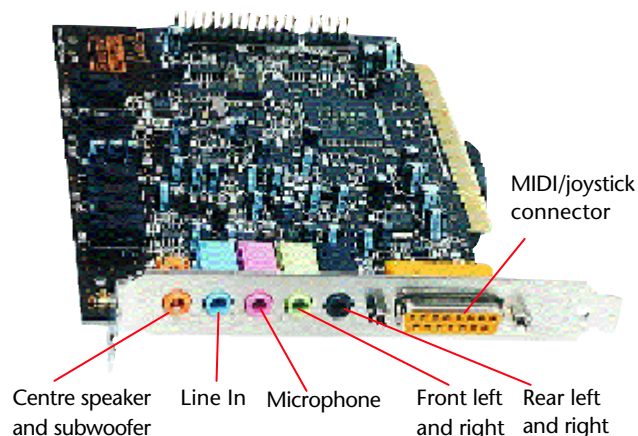
DirectSound3D (DS3D) was introduced in DirectX 3.0 and allowed developers to place a sound anywhere in 3D space. Although DS3D allowed for 3D sound effects, it did not offer much in the way of simulating a particular environment. Thus a gunfight in a game would sound much the same in an auditorium and a cave. This mantle was taken up by other APIs such as Creative Labs' **Environmental Audio Extension (EAX)** and **Aureal's A3D**. EAX took the relatively easy route and with the help of reverberations and echoes simulated the properties of a place, rather than the place itself. Thus under EAX, the echo in a cave would be different from the sound reverberations in, say, a corridor. A3D went all out and decided to completely simulate a locale in question. This was akin to creating a virtual world in 3D using a program like 3D Studio Max, but the treatment here was aural rather than visual.

There are other APIs as well, noteworthy amongst them being **I3DL2**. It is a collaborative effort that is aimed at extending the capabilities of Creative Labs' EAX open reverberation standard. It defines the space where the listener is located, takes advantage of the reverberation cues in the current environment and renders the muffling effects of obstacles inside environments or partitions between environments.

Creative Audigy Platinum outshone the others in this department, providing drivers for all major operating systems.

For those using their PCs as machines to create and mix music, the number of MIDI channels supported and SoundFont support are critical features. MIDI channels are nothing but the number of instruments or vocals that a soundcard can support through a synthesiser. Out of the lot, only Creative's Vibra 128 supported a meagre 16-channels, the rest offered an excellent 48-channel solution. Although home users would hardly find any difference while listening to MP3s or playing games, for a professional sound artist this could be the most crucial factor. SoundFonts allows users to create their own sample music and play them back, create some beats, or even grab some music from a digital audio file. It also lets you play most of the known musical instruments available, through your PC. Only the Audigy Platinum, Extigy and the Sound Blaster Live! DE 5.1 sported this feature. If you are looking for a card that will let you record your own audio, keep the following in mind: the more the recording-depth and bit rate that a soundcard offers, the better the quality of sound that can be recorded. Creative's Extigy was the clear leader here. It offered a high 24-bit depth at a 96 KHz sampling

Soundcard Connectors Demystified



frequency for both playback and recording, proving to be the clear choice for the professionals. The Audigy had a playback depth of 24 bits but the recording was at the normal 16-bit depth. The other cards lagged behind with 16-bit recording depth and 48 KHz sampling rate.

Finally, we come to the often-overlooked feature of connectors. Most cards today sport all the necessary connectors like Line Out, Microphone Out, MIDI and joystick ports, etc. If you are looking for a normal two-speaker solution, you should not have any problems with any of the available cards. However, for those looking at building a home theatre system (with 5.1 speakers), the connectors become all the more important. An S/PDIF or any other Digital Out connection is a must here as it provides a pure digital signal without any interference. It can also act as a pass through in case the soundcard doesn't have any Dolby Digital decoding capability—the speaker's Dolby decoder unit will then decode the digital signal. These connectors were only available in the premium soundcards available from Creative: the Audigy Platinum and the Extigy. The others like Zoltrix's Nightingale Pro 6 did provide six-channel output, but did not feature an S/PDIF Out connector.

A unique feature to note is that Creative Audigy Platinum has a daughter Audigy drive. The external drive gives better access to controls and comes with an SB1394 (FireWire) connector for connecting ultra fast playback and recording devices. Our opinion is that instead of FireWire, USB 2.0 support would have been a better proposition, as there are more devices supporting this standard.

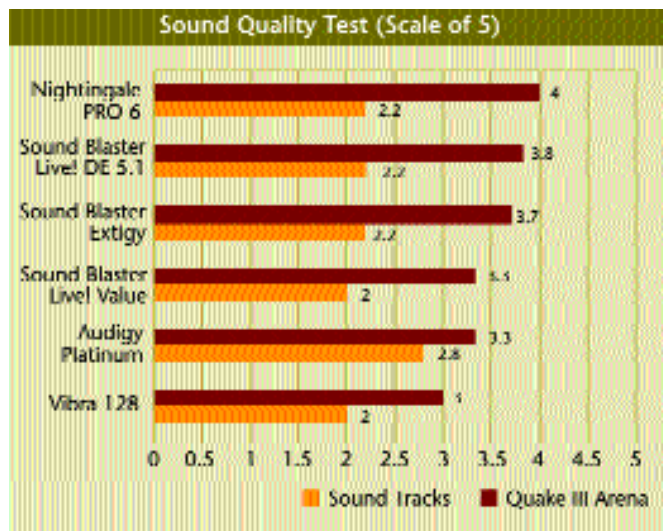


The Audigy drive packs a lot of connectors on the front panel

The Extigy is aimed at notebook users and was the only external 'soundcard' available. The Sound Blaster Extigy provides hassle-free installation by easily plugging into any available USB port on your PC or notebook. But to our dismay, the Extigy only had support for USB 1.1, which can become a bottleneck as shown in our CPU utilisation tests below.

Performance

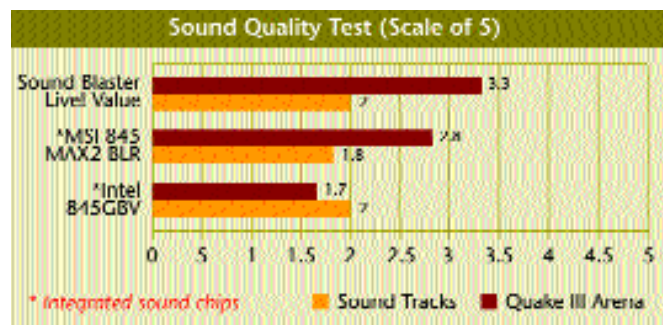
To find out the best amongst the available soundcards, we used a battery of real world as well as benchmark applications. A



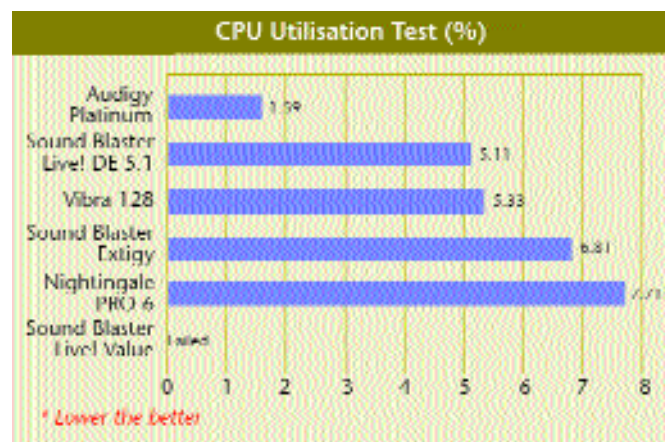
subjective analysis was carried out to determine the quality of sound that a card can deliver under various applications. To ascertain the validity of the technical claims that a manufacturer makes for its product, we used a very comprehensive evaluation tool—RightMark Audio Analyzer (RMAA). We also used a game and a benchmarking suite to evaluate the stress that a card puts on the overall computer system. Thus, by choosing this mix of subjective and analytical tests, we were able to obtain a clear picture of the performance of a soundcard.

Sound quality: To get a handle on the performance of a soundcard while playing music, we used an audio CD that had a mix of Hindi and English songs. This mix was chosen for both the variation in the musical instruments used and the fact that Indian songs tend to be more vocal-heavy than their Western counterparts. Apart from the clarity of each instrument, overall bass and treble output were given importance while evaluating the cards. The tracks were played to three different reviewers who rated each on a scale of 5; the weighted averages of the scores were then logged.

The scores of all the soundcards ranged between 1.9 and 2.8 (out of a maximum of 5). This was a poor showing on the part of all the contenders. The Audigy did win, but with a paltry score of 2.8 out of 5. The other cards barely crossed the mark of 2 points. The Creative Sound Blaster Live! DE 5.1 came in second with a score of 2.2, but it produced a slight crackling sound and its bass output was also not up to the mark.



Integrated sound chips have evolved to a level where they can closely compete with the best soundcards in the market and offer an ideal solution for the cash-strapped consumer



We also accessed the sound quality of a card while playing games. A quick fragfest under *Quake III Arena* (map DM9) left our reviewers with grins on their faces. This game has amazing sound effects and a very funky music score that consists of some cool guitar riffs and drum beats. We observed the clarity with which a card presented these effects. Moreover, the game engine's use of Doppler sound effects (for the rocket launcher) also helped us evaluate the effectiveness of a cards' multi-channel support. Amongst the cards, the Zoltrix Nightingale PRO 6 impressed us the most with a score of 4 out of the maximum of 5. With 5.1 speaker support, the Nightingale brought every fight to life, even as it offered a thumping bass and an amazingly clear treble. The Creative Sound Blaster Live! DE 5.1 came in a close second with 3.8 points, whereas the Creative Vibra 128 lagged behind the rest of the pack with a below-average score of 3 points.

CPU utilisation: A soundcard takes up precious processor resources while doing its job. This has repercussions in the multi-tasking environment that current operating systems deliver, as task-switching can become a painful experience. Needless to say, a low number in this test indicates a good performance by the soundcard. We used 3D Audio Winbench, an application that gives the total CPU usage by a soundcard. The results were quite interesting, with the Creative Audigy Platinum topping this test with an excellent score of 1.59 per cent utilisation. Surprisingly, the Sound Blaster Live! Value failed this test, despite updating its drivers. The external Sound Blaster Extigy was plagued by the limitations of its USB connection and posted the second worst score of 6.81 per cent. The worst score however, belonged to the Zoltrix Nightingale PRO 6 (7.71 per cent). A thing to keep in mind while digesting all this is that current processors are speed demons. If the card consumes 7 per cent of resources out of a total available speed of say, 1 GHz, you won't notice any difference in speed.

This became all the more apparent in our game tests using *Quake III Arena*. We recorded the fps under both Normal and High Quality sound mode. By doing this, we hoped to bring to light the overhead that high-quality sound puts on a system. We were expecting notable differences in the score under the two modes—the fps should have been lesser while running the game with high quality sound enabled. The results belied our expectations—the scores under both the modes and across all the cards (except for the Creative Sound Blaster Extigy) did not vary by much. The performance of the Extigy solution can again be blamed on its USB 1.1 connection. So, if you have a high-end processor in your system, you can be rest assured



	Creative Audigy Platinum	Creative Sound Blaster Live! Value	Creative Sound Blaster Extigy	Creative Sound Blaster Live! DE 5.1	Creative Vibra 128
Features					
General Specifications					
Chipset Used	Audigy	EMU10K1	Extigy	EMU10K1	ES1371
Speaker support	5.1	4.1	5.1	5.1	2
In-built Amplifier	✗	✗	✗	✗	✓ (only for Line Out)
API Support	DirectSound, DS3D, EAX 1.0, EAX Advanced HD, EAX 2.0, I3DL2 and A3D 1.0	DirectSound, DS3D, EAX 1.0, EAX Advanced HD, EAX 2.0	DirectSound, DS3D, EAX 1.0, EAX Advanced HD, EAX 2.0, I3DL2 and A3D 1.0	DirectSound, DS3D, EAX 1.0, EAX Advanced HD, EAX 2.0, I3DL2 and A3D 1.0	DirectSound, DS3D
Dolby Digital 5.1 decoding	✓	✗	✓	✓	✗
Operating System	Windows 3.x/95/98/NT/2K/XP, MS-DOS, Linux	Windows 3.x/9x/NT/2K/XP, MS-DOS	Windows 3.x/9x/NT/2K/XP, MS-DOS	Windows 3.x/9x/NT/2K/XP, MS-DOS	Windows 9x/NT/2K/XP, MS-DOS
MIDI Synthesizer					
Synthesis type (Wavetable / FM Synthesis)	Wavetable	Wavetable	Wavetable	Wavetable	Wavetable
Wavetable Memory	Based on System RAM (up to 1 GB)	Based on System RAM (up to 32 MB)	Based on System RAM (up to 1 GB)	Based on System RAM (up to 32 MB)	Based on System RAM
Sample Sets (MB)	4, 8	2, 4, 8	2, 4, 8	2, 4, 8	2, 4, 8
Polyphony (Hardware, Software voices)	64, 512	64, 512	64, 512	64, 512	128, NA
Midi Channels	48	48	48	48	16
SoundFont Support	✓ (including SoundFont 2.1)	✗	✓	✓	✗
Digital Audio Features					
Duplex Type	Full	Full	Full	Full	Full
Maximum Recording Depth & Rate	16 bit @ 48 KHz	16 bit @ 48 KHz	24 bit @ 96 KHz	16 bit @ 48 KHz	16 bit @ 48 KHz
Max. Playback Depth & Rate	24 bit @ 96 KHz	16 bit @ 48 KHz	24 bit @ 96 KHz	16 bit @ 48 KHz	16 bit @ 48 KHz
Signal-to-Noise Ratio (dB)	100	96	100	96	90
Connectors					
Microphone In	✓	✓	✓	✓	✓
Line In	✓	✓	✓	✓	✓
Line Out (Front channel)	✓	✓	✓	✓	✓
Line Out (Rear channel)	✓	✓	✓	✓	✗
Center / Sub Woofer Out	✓	✗	✓	✓	✗
S/PDIF Out (6 channel output)	✓	✗	✓	✗	✗
MIDI / Joystick Port	✓	✓	✓	✓	✓
CD In	✓	✓	✓	✓	✓
Telephone Answering Device (TAD) In	✓	✓	✓	✓	✓
Auxiliary In	✓	✗	✓	✗	✓
Help & Documentation					
Listing of specifications	✓	✗	✗	✗	✗
Quick setup guide	✓	✗	✗	✗	✗
Troubleshooting	✗	✗	✗	✗	✗
Contact information for after sales support	✗	✗	✗	✗	✗
Performance					
Sound Quality					
Sound Tracks (Scale of 5)	2.8	2.0	2.2	2.2	2.0
Quake III Arena Map DM9 (Scale of 5)	3.3	3.3	3.7	3.8	3.0
CPU Utilisation					
Quake III Arena Map DM9 at Normal / High Quality Sound (fps)	47.3 / 48.3	46.8 / 47.7	47.4 / 43.6	48.3 / 47.1	28.4 / 28.4
3D Audio Winbench (%)	1.59	Failed	6.81	5.11	5.33
Technical Test (RMAA 3.4)					
Frequency Response (dB)*	-1.66, +2.37	-0.58, +3.67	-0.92, +0.66	-4.81, +21.56	-0.66, +1.79
Signal-to-Noise level (dB)**	-80.8	-85.1	-104.3	-79.9	-60.7
Dynamic Range (dB)**	78.5	81.8	92.5	76.9	58.3
Total Harmonic Distortion + Noise (%)***	0.0042	0.0057	0.0047	0.0086	32.0379
Stereo Cross Talk (dB)**	-79.1	-83.0	-104.0	-85.7	-34.8
Warranty & Support					
Number of authorised service centres	18	18	18	18	18
Number of cities where service centres are present	18	18	18	18	18
Period of warranty (Years)	1	1	1	1	1
Overall Score					
Features (30%)	28.00	17.50	28.50	22.50	11.00
Performance (40%)	33.21	24.70	25.16	27.04	23.41
Warranty & Support (10%)	6.00	6.00	6.00	6.00	6.00
Value for Money (20%)	2.75	11.47	2.78	11.86	22.26
Overall Product Rating	69.96	59.67	62.44	67.40	62.67
Overall Grade	A-	B	B+	A-	B+
Vendor name	Compuage Infocom Ltd	Compuage Infocom Ltd	Compuage Infocom Ltd	Compuage Infocom Ltd	Compuage Infocom Ltd
E-mail	info@compuageindia.com	info@compuageindia.com	info@compuageindia.com	info@compuageindia.com	info@compuageindia.com
Price (In Rupees)	13,915	2,300	12,075	2,610	966

Disclaimer: * Lower the difference, the better

** Higher the better

*** Lower the better

† Integrated audio



Zoltrix Nightingale PRO 6	Intel 845GBV †	MSI 845 MAX2 BLR †
CMi8738-6CH	AD1981A	AL650
5.1	2	5.1
✗	✗	✗
DirectSound, DS3D, EAX 1.0, EAX Advanced HD, EAX 2.0, and A3D 1.0	DirectSound, DS3D, EAX 1.0, EAX 2.0, I3DL2	DirectSound, DS3D, EAX 1.0, EAX Advanced HD, EAX 2.0
✗	✗	✗
Windows 9x/NT/2K/XP	Windows 3.x/9x/NT/2K/XP	Windows 3.x/9x/NT/2K/XP
Wavetable Based on System RAM 2, 4, 8 128, NA 48	Wavetable Based on System RAM NA NA 16	Wavetable Based on System RAM NA NA 48
✗	✗	✓
Full 16 bit @ 48 KHz 16 bit @ 48 KHz 85	Full 16 bit @ 48 KHz 16 bit @ 48 KHz 90	Full 16 bit @ 48 KHz 16 bit @ 48 KHz 100
✓	✓	✓
✓	✓	✓
✓	✓	✓
✓	✗	✓
✓	✗	✓
✗	✗	✓
✓	✗	✗
✓	✗	✗
✓	✗	✗
✗	✗	✗
✓	✗	✓
✗	✓	✓
✗	✗	✓
2.2	2.0	1.8
4.0	1.7	2.8
48.1 / 48.8	47.4 / 48.8	32.9 / 32.9
7.71	1.00	2.53
-5.81, +0.09	-0.03, +0.11	-0.42, +0.24
-67.2	-85.8	-80.8
67.9	83.8	78.5
6.997	0.0122	0.0022
-68.1	-79.2	-79.2
8	8	15
2	10	10
1	1	1
20.50	10.00	22.00
26.77	23.05	22.77
4.00	5.00	6.00
14.77	20.00	20.00
66.04	58.05	70.77
A-	B	A-
Kunhar Peripherals Pvt Ltd salesbom@ kunhar.com 2,000	Nebula Technologies pankaj@ nebulatech.com 8,120 (for motherboard)	Priya Limited salesbom@priyagroup.com 10,600 (for motherboard)

that the overhead caused by the soundcard would not affect your work.

Technical test (RMAA): RightMark Audio Analyzer was used to test the core circuitry of the soundcard and to determine its performance. It is a loop-back test, wherein sound generated by the card is sent through the Line Out jack and is then reverted back to the card from the Microphone In or Line In port. This process effectively removes bottlenecks such as a slow processor or the presence of older peripherals. RMAA thus tests the raw soundcard performance. We tested the soundcards for five varied set of parameters:


a) Frequency response: This checks whether the soundcard distorts the relative loudness of different frequencies in a sound signal. Errors in frequency response are generally thought to be the most audible form of linear distortion. The Extigy almost touched perfection, generating a minimal difference of 1.58 dB. It was closely followed by the Creative Vibra 128 with a difference of 2.45 dB. The Creative Sound Blaster Live! DE 5.1 was surprisingly at the bottom with a frequency response of 26.37 dB (range of -4.81, +21.56), indicating that on the higher pitch the soundcard produces a lot of distortion.

b) Signal-to-Noise level: This test estimates the noise level that can be heard when nothing is playing and the volume level on the speakers is turned up high. It also helps to locate interference caused by electronic circuits, CRT displays and other such devices. The results here are in the negative and a higher number means better performance under this test. The Creative Sound Blaster Extigy was at the top of the pool. With an excellent attenuation of -104.3 dB, this card hardly produces any noise. The Vibra 128 and Zoltrix Nightingale PRO 6 generated really poor scores of -60.7 dB and -67.2 dB respectively, which indicated that a lot of disturbance and humming were produced by these soundcards. The rest performed adequately with an average attenuation of -80 dB.

c) Dynamic range: The dynamic range of a card determines the range of frequencies within which it can produce clean sound. This test also estimates the noise level in the presence of a weak audio signal and sheds light on the limit of the sound device while operating at low signal levels—an important aspect for high-quality sound recording and playback.

The results were quite as expected with the Vibra 128 remaining at the bottom of the ladder with a score of 58.3 dB while the Extigy scored 92.5 dB! The Extigy is therefore an excellent solution for professional quality audio recording and playback.

d) Total Harmonic Distortion (THD) and Noise: This test estimates the amount of harmonic distortion that occurs when an audio signal with large amplitude passes the testing chain. THD is determined by measuring the size of each of the new



Amplified Soundcards

Older ISA cards had an on board amplifier and did not require an amplified speaker set. Due to the distortion in sound that this practise caused, newer soundcards do not come with amplifiers. So, if your new soundcard does not play anything on your old speakers, you might have a non-amplified set that will need to be replaced.

frequencies that are created by the source of the distortion. The battle was closely fought—the Audigy Platinum, the Sound Blaster Live! Value, the Extigy and the Live! DE 5.1, each scored within 0.0044 per cent of each other. The Vibra 128 generated a disappointing score of 32.0379 per cent.

e) **Stereo Cross talk:** The last of our tests estimates signal leakages from one channel to another. If a sound device has a poor score here, you might not be able to get good stereo sound. Once again, the Extigy stood tall in front of its competitors with a score of -104 dB, while the Vibra fared the worst with -34.8 dB.

Warranty and support

Soundcards hardly experience problems that require servicing; the only major concern is getting the right drivers for the operating system used. But given the price of some of the cards available, extended warranty life is a reassuring benefit. Most of the vendors provide a flat one-year warranty, which we think is a bit less. Consider the case of the Audigy Platinum and the Creative Extigy. With their prices being on the higher side, the number of years for which the product is warranted against manufacturing defects gets more critical than having a greater number of service centres. Service centres, however, have a pretty decent coverage: the Creative series of soundcards being distributed by Compugate Infocom has 18 service centres in 18 cities. The Zoltrix Nightingale PRO 6 has only eight service centres across two cities—a stumbling block for potential buyers. We feel that users will be served better if vendors extend the warranty period of these products.

Buying Tips

- Define your usage. If you are an avid music lover, go for a soundcard that supports multiple channels. If you want a gaming solution, buy a card that supports the standard 3D APIs, viz., DirectSound, EAX, A3D and I3DL2.
- The vendor should provide a minimum one-year warranty for budget soundcards (under Rs 2,000) and at least a three-year warranty for costlier variants.
- Before buying, make sure that the soundcard's interface is PCI or USB and not ISA. If you plan to use your soundcard for playing games or watching DVD movies, get a PCI soundcard.
- See to it that the soundcard you are buying has drivers for your favourite operating system. Users of Microsoft Windows should not face problems, but the requisite drivers for the Linux OS for example, might be hard to come by.
- If you are an audiophile and appreciate minimum signal loss, buy a soundcard that uses gold-plated connectors.
- Check to see if the soundcard comes bundled with a decent variety of applications (such as games and media players). If you are a first time buyer, these will prove to be very essential to get the most out of your purchase.

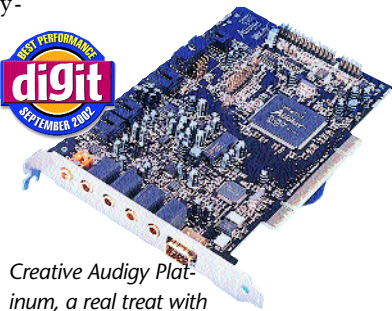
Decision Maker			
You want	A basic, no-frills sound-card	Surround sound at an affordable price	Excellent sound quality for professional level editing
Look for	A full-duplex card or a motherboard with an on-board sound chip that provides simple stereo or 2.1 channel output	A card with 4.1 or 5.1 channel support. In-built Dolby Digital decoding will be an added bonus	A card that supports 24-bit recording at 96 KHz along with connectors like S/PDIF, DIN or FireWire
Your options	AD1981A-based motherboard or Creative Vibra 128	Creative Sound Blaster Live! DE 5.1 or Zoltrix Nightingale PRO 6	Creative Audigy Platinum or Creative Sound Blaster Extigy
Price range	Up to Rs 1,000 (for external soundcard)	Rs 2,000 to Rs 2,700	Above Rs 10,000

What it all leads to

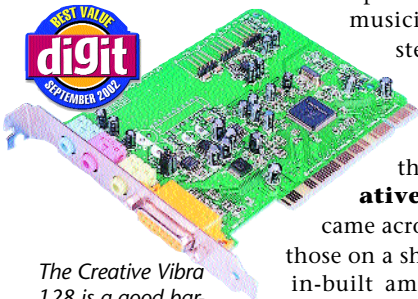
Soundcards have come of age. The quality of sound offered by the majority of these cards is good enough to satiate the casual listener, while the high-end products are guaranteed to impress even the most discerning audiophile. The Zoltrix Nightingale PRO 6 fought hard against the Extigy, scoring a 26.77 in the performance test, compared to Extigy's 25.16 points. However, the Creative cards walked away with all the accolades.

The Best Performance Award goes to the **Creative Audigy Platinum**, which edged out its nearest rival, the Creative Sound Blaster Live! DE 5.1. This card provides good quality thanks to the 24-bit sound playback depth and its support for 5.1-channel sound. Moreover, it put the least amount of stress on the system (only 1.59 per cent CPU utilisation) and produced good noise and cross talk attenuation scores. A bunch of accessories including an external Audigy drive that has FireWire support along with an entire gamut of connectors for pure digital sound. It also comes bundled with good sound and video editing tools like FruityLoops 3, Ulead VideoStudio and Acid Style 2.0—an excellent solution for an audiophile as well as a professional musician. But its price is a bit steep at Rs 13,915.

The Best Value Award went to yet another product from the Creative stable. The **Creative Vibra 128**, at Rs 966, came across as an ideal solution for those on a shoestring budget. It has an in-built amplifier for the Line Out port, which might be a boon to those with non-amplified speakers. The sound quality was also quite acceptable; it scored 2.03 and 3 points under the sound track and the gaming test, respectively.



Creative Audigy Platinum, a real treat with excellent sound clarity



The Creative Vibra 128 is a good bargain for the non-discerning user

ASHU MEHROTRA and AHMED SHAIKH

MUSIC UNPLUGGED

The birth of compressed digital audio and the arrival of portable MP3 devices will have you humming, wherever you go

Sony's Walkman introduced us to the world of portable music. This music device could play cassettes, had a good battery life and came in a compact, convenient size. Now many decades later and various technologies past, we stand witness to another revolution with the advent of portable digital music players. And thanks to compressed audio formats like MP3, you can now carry your entire CD or tape collection and enjoy your favourite music anywhere you go. Plus, the absence of moving parts in solid-state MP3 players enables them to handle a lot of shocks and bumps, making them an ideal companion while travelling or jogging.

Whether you are looking for an MP3 player that will offer you long playtime or one which is compact enough to fit in your shirt pocket, the great news is that there is something for everyone. We test six products that aim to please our ears, with the intention of finding out the best of the bunch.

Digit Test Process

The test bed used to evaluate the portable players consisted of Windows 98 running on a Pentium III 700 MHz processor with 128 MB of SDRAM and an 8.5 GB 5,400-rpm hard drive. Test MP3 files were burned on a CD to test the CD-based MP3 players, while with solid state MP3 players, these files were uploaded into their Flash memory.

Test Methodology

We evaluated the MP3 players on features (40 per cent weightage), ease of use (10 per cent weightage), performance (20 per cent weightage), warranty and support (10 per cent weightage) and value for money (20 per cent weightage).

Features: Features like different music formats supported, presence of an FM tuner, the ability to upgrade the firmware, bundling of rechargeable batteries, etc were rated. These are the features you should be looking out for while buying a player. We also evaluated the ease with which a player lets you enjoy your music. To do this, we noted down the most important playback features, like the ability to create customised playlists, along with the facility to repeat and shuffle MP3 tracks.

Ease of use: Here we observed the ergonomics and the button placements of each MP3 player. Since these players are going to be used more outdoors than indoors, their weight, dimension and the presence of a backlit display were also noted.

Performance: We used a variety of music files (five in all) to evaluate the performance of the MP3 players and the

earphones that were bundled with them. The bass and treble test was carried to check out how purely the MP3 player produces these frequencies and whether there were any distortions. The English songs had a variety of instruments being played at the same time and they gave us an indication of the frequency response of the player. The Hindi songs, with their emphasis on vocals, gave us an indication of the clarity and the fidelity of the sounds produced.

Warranty and support: Here we took into account the warranty period for the MP3 players, the number of authorised

Compressed Audio Formats



The MP3 compression algorithm has changed the way we listen to music and the popularity of portable players that support the standard has never been greater. Fraunhofer developed the algorithm back in 1989. It was meant as a solution to cut down on the size of the very large WAV files that littered the music scene. Not only did it successfully deliver on that front, but the near CD-quality audio it offered, allowed it to capture the hearts and ears of music lovers everywhere. There are other solutions available which run neck-and-neck with the MP3 format, offering a similar solution—WMA, Ogg Vorbis, AC3, TwinVQ, RealAudio and AAC, to name a few. There are some players that support the AAC format, but its acceptance is not as wide as MP3.

Ogg Vorbis is the challenger from the open source world and delivers a comparable audio quality at zero cost. Thus, if you wish to upload your music to the Internet, you can use this compression solution to do so—royalty-free. The only problem is that it is not widely supported by MP3 players in the market. RCA Lyra was the only MP3 hardware player that supported the RealAudio format in the past but abandoned it for the more popular MP3 and WMA formats. The gaining popularity of the Windows Media Audio (WMA) format is two-fold: it offers audio quality that is comparable to an MP3 file and at a much smaller file size. It is also being aggressively marketed by Microsoft as an ideal solution to Digital Rights Management—a move that has attracted the support of a lot of music companies. As things stand, MP3 and WMA are the only formats supported by most of the portable MP3 players in the market.



Music on the Go

Nothing can upstage the pleasure of listening to your favourite tunes while you are stuck in bumper-to-bumper traffic.

If your car deck has a Line In port, connecting an MP3 player to your car deck is just a matter of getting a 3.5 mm stereo cable and plugging it in. Connect the red and white RCA connectors to the car deck and the single pin connector to your MP3 player's Line Out or earphone jack. If the audio system in your car does not have a Line In function, you can buy a car MP3 adapter from the market. This adapter looks exactly like a cassette



with the connection port on one end where the stereo cable is connected, while the other end goes in the earphone jack on the MP3 player. The trade off here is that the sound quality will not be so good because of the magnetic coupling between the adapter head and car audio system's head. The magnetic interference will produce noise and hence a loss in sound quality, but hey, it still beats cassettes!



service centres appointed by their companies and the number of cities in which the centres are present.

Value for money: This provides us with a price-performance ratio—a player offering good performance at a reasonable price will score higher in this category than one offering excellent performance with a hefty price tag.

How They Fared

We tested six MP3 players from vendors such as Creative Labs and D-Link Corp. We based our evaluation on criteria ranging from the features that a portable player supports (like the ability to play both MP3 and WMA files), to its performance (audio quality and battery life).

Features

Being a portable device, the playtime that an MP3 player offers becomes crucial—a longer battery life will keep the device going and will ease the burden on your wallet as you won't have to repeatedly buy batteries. Of course, if the player comes with a set of rechargeable batteries like the NAPA DAV316, there is nothing like it. Finally, as a general rule, solid-state devices consume less power than CD-based solutions on account of the absence of any moving parts.

The second most important trait is the space offered to store the music files. CD-based players rule the roost in this regard, since a CD can store up to 700 MB of compressed files. If you are looking for a CD-driven solution, make sure that it has electronic shock protection. The models that we tested, for example, all sported a 120 second buffer, which allowed them to play songs without skipping, while travelling.

In the case of a solid-state player, the question of future

upgrades comes into play—the D-Link DMP-100, for example offers a SmartMedia external module and the Creative PA-20 can be upgraded from its internal 32 MB memory to a maximum of 96 MB. Ensure that the MP3 player supports at least one of the standard audio formats, viz. MP3 and WMA, or preferably both like the Creative PA-20. As a rule, a CD-based player will play both MP3 and audio CDs.

Most of the solid state devices use a USB port to transfer songs to and from the computer, the D-Link DMP-100 being the only exception. A USB port is, of course, not essential for the CD-based devices, but the extra cost of a CD-Writer that will be needed to create those MP3 CDs should be considered.

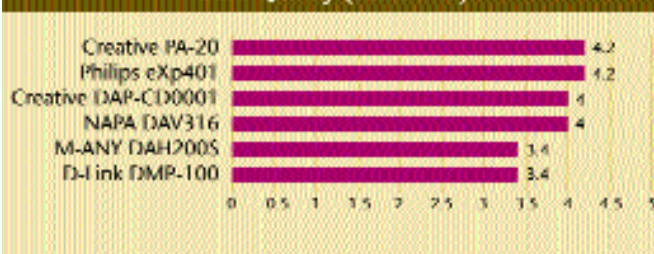
A cool thing to have in a portable device is a manual equalizer. Alas, none of the products we tested had them, though some did come with preset-equalizer modes that let you choose between settings such as Pop, Jazz, Rock, etc—the D-Link player being one such solution.

An MP3 player would not be half as useful if it did not allow you to customise your favourite tracks. A good player should support creation of customised playlists, editing of playlists and should feature a track browser, to let you choose and select a song from within a list. Moreover, an ability to randomise a list of songs or to get a 10-second preview of all the songs within a list is considered a bonus. The Creative DAP-CD0001 supports all these essentials, whereas the M-ANY DAH2005 does not feature even one.

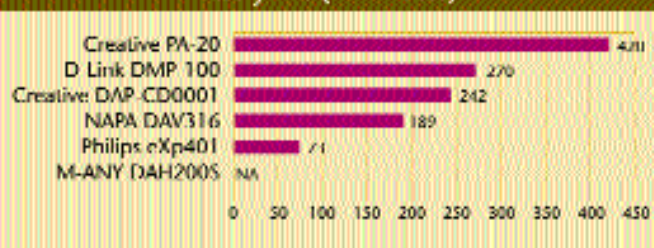
Ease of use and ergonomics

Ergonomics plays an equally important role in the buying decision, as do features. Portability, placement of buttons and ease of navigation are important pieces that fall in to create the perfect MP3 player. Thus, while evaluating the contenders, we first looked at whether the buttons were well within reach or were put in places that are hard to get at. The Creative DAP-CD0001 and the NAPA DAV316 had the buttons placed in a most logical way, most of them occupying the front panel. We also determined the ease with which a player lets you navigate its menu structure. The Creative DAP-CD0001 again scored high points

Audio Quality (Scale of 5)



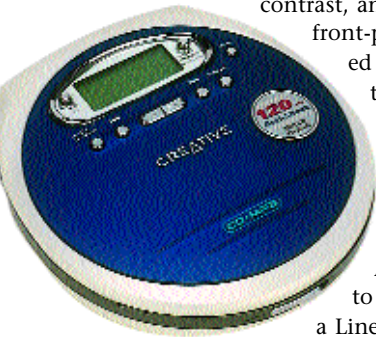
Battery Life (in minutes)



Creative DAP CD0001

The Creative DAP CD0001 is a CD-based MP3 player. To enjoy music on this unit, you will need to copy your MP3 audio collection to a CD. The fact that this unit can also play normal audio CDs is an attractive bonus. The unit is reasonably compact, easy on the eyes with its good colour contrast, and has a matte-finished front-panel with chrome-plated buttons. Rubber feet on the base prevent the player from slipping off tables while a good build quality ensures that the unit can take a couple of nasty falls.

All in all, it is a chic unit to sport around. It also has a Line Out port that lets you connect the player to your home audio system. The bundled DC-adaptor lets you run the unit even when it is out of battery. The DAP has a comfortably large LCD display and built-in support for ID3 tags, enabling you to identify the name of the song that is playing. As a CD-based unit, this player needs some sort of anti-shock protection, to prevent songs from skipping. It has a 120 second anti-skip buffer that does just that. The DAP also comes with a useful remote control unit, and has a sufficiently long cable for both the remote and the earphones that are bundled along with it. Great features combined with an excellent showing in our test runs and an affordable price of Rs 8,625 made this the clear overall winner in our line-up.



Creative DAP CD0001		A-
Features	▶ ▶ ▶ ▶ ▶	
Ease of use	▶ ▶ ▶ ▶ ▶	
Performance	▶ ▶ ▶ ▶ ▶	
Warranty & support	▶ ▶ ▶ ▶ ▶	
Value for money	▶ ▶ ▶ ▶ ▶	
OVERALL	▶ ▶ ▶ ▶ ▶	

and had the most easy-to-understand menu navigation with all the important features placed within two clicks. As far as portability goes, the Creative PA-20 and the D-Link DMP-100 are unbeatable because of their diminutive size and light weight.

Performance

Although features are important while buying an MP3 player, its performance under different conditions is equally critical. The audio quality it offers, as determined by the frequency response (ranging from bass to treble) and the purity of output are some of the things that we tested to evaluate the contenders.

Audio quality: Each MP3 player was tested using five different audio tracks. These tracks presented a picture of whether the player is perfectly balanced in the low, mid and high tones and whether the bundled earphones cause signal losses in any of these areas. The Philips eXp401 and the Creative PA-20 both came up with top scores. The Philips unit gave the best result in the bass test (it scored 4 points) with no distortion and the

1//2 page ver AD

NAPA DAV316

Elegantly designed with a sweet colour combination, the NAPA DAV316 immediately captured our hearts. A CD-based MP3 solution, this unit performed very well in our sound quality tests delivering both good bass and excellent treble. It had large, easy-to-use buttons on the front panel and an elegant LCD display for ID3 information and navigation. The ID3 tag support displays the song being played, the name of the artiste and the album from which the number is taken. Its 120-second anti-shock protection puts it in the same league as the Creative DAP CD0001—this feature lets you enjoy your favourite



tracks on the move, without worrying about skipping a beat. The unit supports MP3 audio on a CD, CD-R or a CD-RW medium, along with normal Audio CDs. It's bundled with NiMH rechargeable batteries—a great feature for the price conscious. The Line Out port the NAPA sports allows you to connect it to an external music system. It also comes with a DC adapter port that lets you run the unit off an electric outlet to save up on the batteries. With a price tag of Rs 5,650, the NAPA DAV316 managed to bag out Best Value award.

NAPA DAV316		A-
Features	▶▶▶▶▶	
Ease of use	▶▶▶▶▶	
Performance	▶▶▶▶▶	
Warranty & support	▶▶▶▶▶	
Value for money	▶▶▶▶▶	
OVERALL	▶▶▶▶▶	

same performance was extended to the treble test, with 5 points. It also presented the English and Hindi tracks with equally good fidelity. The PA-20 did not reproduce the bass track with a quality equal to that of the Philips player (it scored 3 points); it did however perform significantly better with the music tracks, reproducing both vocals and instruments with equal fervour. The D-Link DMP-100 lagged behind the others in terms of sound quality. This was mainly because of the quality of the accompanying earphones. Surprisingly, the sound quality was decent while playing the vocal-heavy Hindi songs. This was mainly because earphones can't deliver high pitch sounds but perform well while playing songs with lots of mids and vocals. NAPA DAV316 and Creative DAP-CD0001 were two players that gave consistently average quality sound across the entire test.

Battery life: To test the battery life, each player was run continuously at full volume, while we noted down the time taken to drain the batteries completely. The Creative PA-20 took the crown by logging more than 420 minutes of playtime on one set of batteries. Even if you used this unit for 2 hours daily, a single pair of batteries will last for at least five days. The PA-20

was followed by the D-Link DMP-100 with 270 minutes of battery life. The Philips eXp401 logged the lowest score amongst the bunch with all its battery power consumed in 73 minutes flat!

Shock absorption test: Being a portable music system, MP3 players will be used, by definition, while travelling or during those long early-morning jogs and walks. This requires a player that will not skip music and is compact. To test the ability of the CD-based players to output music without skipping, we impact-tested them. A thing to keep in mind is that this test was not meant for the solid-state devices, since they have no moving parts to cause the skipping. An impact force was applied to the player (by either shaking it or tapping it) to ascertain if there was any skipping in the tracks being played. Thanks to a healthy use of buffers, all the players passed this test with flying colours, and none of the CD-based MP3 units skipped even a millisecond worth of music.

Warranty and support

Warranty and support are important issues with portable devices, since they are likely to be roughed up during daily

What to Look for while Buying an MP3 Player

- If you desire a portable and compact device, then make sure that the MP3 player you are buying is a solid state device.
- If maximum storage is your priority, a CD-based MP3 device would be an ideal solution.
- See that the player supports both MP3 and WMA formats.
- Ascertain that your player has an upgradeable firmware as this will future-proof your purchase: in case the MP3 audio format goes in for a revision, you will be able to upgrade your firmware via software to support the new format.
- The player should have a big enough LCD screen that is backlit, so that reading the information even in dark areas becomes easy.
- The button placement should allow you to operate the player while it is buckled to a belt or is inside your pocket.

- A rechargeable battery is a must if you intend to use the device frequently.
- A case that would allow for easy carrying is also very important. It will prevent scratches on the LCD screen and will minimise impact damage that might prove fatal to this delicate device.
- A good pair of earphones will complete the MP3 player, allowing it to accurately reproduce your favourite songs.
- Make sure that the MP3 player has a warranty for at least one year.
- A Line Out port is a definite advantage, as you can plug the MP3 player to a home or car music system.
- An upgradeable storage capacity is another great feature to look out for in an MP3 player.
- If you are buying a CD-based MP3 player, ensure that it has an electronic shock protection of at least 100 seconds.





	Creative PA-20	Creative DAP-CD0001	D-Link DMP-100	M-ANY DAH200S	NAPA DAV316	Philips eXp401
Features						
Type of Player (Solid-state, CD)	Solid-state	CD	Solid-state	Solid-state	CD	CD
Memory						
Inbuilt	✓	NA	✓	✓	NA	NA
Storage Capacity (MB)	32	700	32	64	700	180 (8 cm)
External Memory Interface	MultiMediaCard	CD, CD-R, CD-RW	SmartMedia	MultiMediaCard	CD, CD-R, CD-RW	CD, CD-R, CD-RW (8 cm)
Battery type/No. of Batteries	AAA, 2	AA, 2	AAA, 2	Proprietary, NiMH	AA, NiMH	AAA, 2
Rechargeable Batteries	✗	✗	✗	✓	✓	✗
Inbuilt Display	✗	LCD	LCD	LCD	LCD	LCD
Remote Control	✗	✓	✗	✗	✗	✗
PC Interface	USB	NA	Parallel	USB	NA	NA
Audio Formats Supported	MP3	MP3, Audio CD	MP3, WMA	MP3, WMA	MP3, Audio CD	MP3, Audio CD
Firmware Upgradeable	✗	✗	✗	✓	✗	✗
Voice Recording	✗	✗	✓	✗	✗	✗
AM/FM Tuner	✗	✗	✗	✗	✗	✗
ID3 Tag Support	✗	✓	✓	✗	✓	✗
Electronic Shock Protection (secs)	NA	120	NA	NA	120	120
Line In/Line Out	✗/✗	✗/✓	✗/✗	✗/✗	✗/✓	✗/✓
Power Saving Mode	✗	✓	✓	✗	✗	✓
Manual Equalizers	✗	✗	✗	✗	✗	✗
Preset Equalizer Modes	Treble, Normal, Bass	✗	Pop, Classic, Jazz, Ex-bass, Flat	Jazz, Pop, Classical, Normal	Classic, Pop, Jazz, Rock, Normal	✗
Playback Features						
Custom Playlists	✗	✓	✗	✗	✗	✓
Track Repeat	✓	✓	✓	✗	✓	✓
Track Browser	✓	✓	✓	✗	✓	✓
Shuffle Tracks	✓	✓	✓	✗	✓	✓
Intro Mode	✗	✓	✗	✗	✗	✗
Bundled software	MP-Manager Application, Drivers	NA	D-Link MP3 Manager, Musicmatch Jukebox 4, AudioCatalyst, Drivers	M-ANY Loader 3.0, Real Jukebox, Audible Manager, Drivers	NA	NA
Ergonomy & Ease of Use						
Dimensions (L x B x H, in mm)	75 x 52 x 15	141.5 x 130 x 28.5	85 x 63 x 17.5	63 x 102 x 11.5	150 x 148 x 32	175 x 130 x 60
Weight (gms)	42	205	62	50	300	200
Intuitive Button Placement (Scale of 5)	2	4	3	2	4	3
Interface/Menu Navigation (Scale of 5)	0	4	3	0	3	2
Earphone Comfort Factor (Scale of 5)	2	4	2	2	NA (earphones not bundled)	2
Portability (Scale of 5)	5	3	5	5	2	4
Backlit Display	✗	✗	✗	✗	✗	✗
Performance						
Audio Quality (Scale of 5)						
Heavy Treble Track	4	4	3	3	4	5
Heavy Bass Track	3	4	3	3	4	4
English Track	5	4	4	4	4	4
Hindi Track #1	5	4	2	4	4	4
Hindi Track #2	4	4	5	3	4	4
Battery Life (mins)	420	242	270	Failed **	189	73
Shock Protection Test	Pass	Pass	Pass	Pass	Pass	Pass
Warranty & Support						
Number of Authorised Service Centres	18	18	16	None	None	174
Number of Cities with Service Centres	18	18	16	None	None	196
Warranty Period (years)	1*	1*	1*	None	None	1*
Overall Score						
Features (40%)	14	24	23	18	25	18
Ease of Use (10%)	6.2	4.4	6.2	5.2	4.4	3.6
Performance (20%)	18.4	15	13.8	12.8	14	13.4
Warranty & Support (10%)	7	7	7	0	0	9
Value for Money (20%)	13.66	12.05	9.81	10.72	17.93	5.76
Overall Product Rating	59.26	62.45	59.81	46.72	61.33	49.76
Overall Grade	B+	A-	B+	C	A-	C+
Vendor Name	Compuage Infocom	Compuage Infocom	D-Link India	Moon Computers	Moon Computers	Philips India
Phone	022-8305500	022-8305500	022-6526696	022-2653390	022-2653390	022-6912000
E-Mail	info@compuageindia.com	info@compuageindia.com	sales@dlink.co.in	sales@moonindia.com	sales@moonindia.com	gautam.dalal@philips.com
Price (In Rupees)	6,325	8,625	10,000	7,910	5,650	14,990

Disclaimers: * Carry-in Warranty

** Even after repeated attempts, the battery could not be charged

Decision Maker		
You are looking for	An MP3 player that is compact and allows you to store up to 2 hours of music	A portable solution that lets you store 10 hours worth of music
You need	A solid state MP3 player that lets you transfer MP3 files from your computer via a USB connection	A portable player that supports CD, CD-R and CD-RW media and a CD-Writer to burn the MP3s
Look for	Creative PA-20 and M-ANY DAH200S	NAPA DAV316 and Creative DAP-CD0001
Price range	Rs 6,000 to Rs 9,000	Rs 5,500 to Rs 9,000

usage. Philips is the only brand to have a staggering 174 service centres across 196 cities in India. The Creative DAP-CD0001 came in at a distant second with 18 service centres spread across 18 cities. Except for the M-ANY DAH200S and NAPA DAV316, all the players came with a one-year carry-in warranty.


The Last Note

The arrival of compression algorithms like MP3 and WMA has heralded a new era in portable music. MP3 players now offer a range and quality so diverse that there is something for every one who likes to jive to the odd beat or two. We have compact, solid-state portables for the travellers, while CD-based players offer an amazing amount of storage space, making carrying your entire music collection within just one single device a distinct possibility. And our tests show that the quality of audio offered by most of these MP3 players is good enough to satisfy even the most discriminating audiophile.

The **Creative PA-20** that was priced at Rs 6,325, won our Best Performance Award, scoring an impressive 18.4 points out of 20 in the features test. The PA-20 also did very well in the audio quality tests, scoring full points for both the English and the Hindi tracks. The fidelity of the musical instruments and the clarity of vocals that it offered remained unmatched to a great extent. It also comes with an in-built memory of 32 MB, which can be upgraded with the help of a MultiMediaCard.



Although small in size the Creative PA-20 packs a mean punch

for the low price of Rs 5,650, it is a solution within the reach of almost everyone. 

ALIASGAR PARDAWALA and AHMED SHAIKH

1//2 page ver AD



Flashing Bright

**Flash MX is more than just a Web animation tool—
it's a full-fledged development platform for creating content-rich Web sites and Web applications**

Flash MX is the first product to be released from Macromedia's new MX line-up. Macromedia's goal is to release a new suite of applications that will enable the development of next-generation Internet content. The MX tagline clearly indicates Macromedia's intention to tighten integration between its various products just like Microsoft 2000 and XP. There's a lot to like about Flash MX such as dockable and collapsible panels, revamped user interface features, expanded video capabilities, improved ActionScript editor and much more. But is it worth your time and money?

Interface and ease of use

Flash MX sports a familiar interface, with the only difference being the incorporation of the MX panel management system. For the first time, layers can be grouped and neatly arranged—you don't need to scroll the layers up and down, or reduce the work area size while working with huge animations which involve lots of layers. To make things even more convenient, every object can be easily distributed as different layers either through

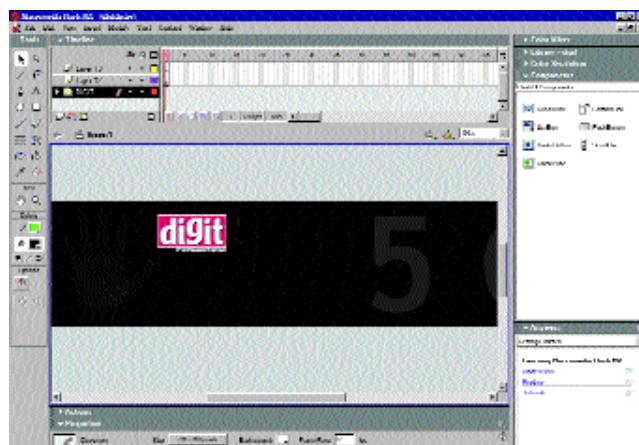
the menu, or by right-clicking on the object itself.

The timeline may seem unaltered at first glance, but you'll notice the differences once you start working with it. In order to select multiple frames, all you have to do is drag the slider across the timeline. With the MX panel management system, you can collapse the timeline to get even more space for the work area.

The back arrow on the timeline lets you go back to your previous working state instead of accessing it through the menu and the magnification option sits conveniently at the edge of the timeline. Knowing the various properties of the object you are working on is imperative. The Property inspector panel now sits on the work area itself, allowing you to change the various properties of the

object instantaneously. Since it shows only relevant, context-sensitive settings when you work, it dramatically reduces the number of panels open at any time.

Though the MX panel management has its advantages, it may not be convenient to some users—the panels slide up and down while accessing them, forcing you to adjust your focus accordingly, which



The revamped interface of Flash MX ensures greater ease of use and flexibility

can be quite irritating. Another point of concern is the absence of the shortcut panel on the status bar that provided quick access to many functions such as Show Movie Explorer, Show Actions, etc.

Design features and elements

Macromedia has introduced some outstanding features that increase productivity considerably. Flash MX incorporates an all-new Transformation tool featuring Distort and Envelope modes. The Envelope mode makes it possible to warp and edit vector objects. The Distort mode allows you to distort the object by its edges or corners and taper it to give it a 3D look. One glitch with both these modes is that you cannot modify symbols, bitmaps, video objects, sounds, gradients, object groups and text. If a multiple object selection contains any of these, only the shape objects are distorted. To modify text, you will have to first convert the characters to shape objects.

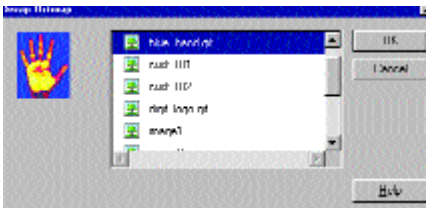
Flash MX also provides a sorely missed element—pixel perfect alignment of objects. You can turn on pixel snapping using the Snap to Pixels command in the View menu. A pixel grid will appear when the view magnification is set to 400 per cent or higher. The pixel grid represents the individual pixels of your frame and when you create or move an object, it is constrained to the pixel grid.

A long-time complaint of Flash users has been the absence of rich media support, i.e. video and audio. Flash MX comes with the Sorenson Spark codec, which means you can import video into Flash in different file formats (AVI, MPEG, etc). When you export the SWF file, the video will be embedded into your Flash movie.

Loading external files is not restricted

to just MP3s. JPEG images can also be imported at run time, allowing you to program events within a Flash movie. This will significantly reduce the overall size of the Flash movie and make the content more dynamic. Another addition is the Font Mapping feature—if you work with a document containing fonts that aren't installed on your system, they will be substituted by those already installed. Alternatively, you could set a default font under *Edit > Preferences > General > Font Mapping Default*.

You can now update and swap symbols in any Macromedia Flash MX document on your computer or on the network. Hence, shared symbols across multiple documents can be manually or automatically updated when a change is made to the original. In case you want to swap images, you don't have to go through the tedious procedure of re-importing the new image. Simply right-click on it and select Swap Bitmap, which will open a panel from which you can select the correct image.



Swap Bitmap allows you to enlarge images without having to reimport the image

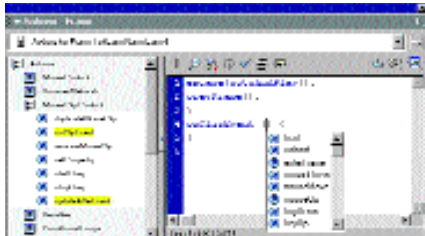
Flash MX also introduces dynamic masking support. Previously, masking could only be done through layers. Now it is possible through ActionScripts that allow you to mask one movie clip object over another, irrespective of the layer it is on. Lastly, the option of allowing the user to save his work as a template gives the flexibility to reuse the saved document as a starting point for other Flash documents.

Development and server-side features

Those who used Flash 4 were overwhelmed by the huge set of ActionScripts, and the inclusion of XML socket commands.

JavaScript support in Flash 5 was a welcome gesture. But Macromedia wants to position Flash MX as a development platform for building content-rich Web-based applications. Hence, JavaScript support has been improved while the ActionScript editor and debugger sport several enhancements.

The ActionScript editor now not only highlights keywords and values in the ActionScript code, but can also detect the

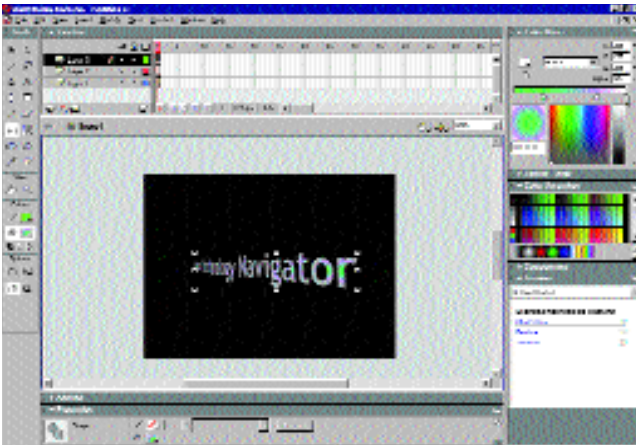


Code Hints make the process of writing scripts a whole lot easier

action you are entering and display a code hint—a tooltip containing the complete syntax for that action or a popup menu listing possible property names and methods. The editor is now a collapsible panel in the interface (owing to the MX panel management system), so you don't need to open a new window every time you want to edit a script. The Script Debugger has also been improved and lets you set breakpoints in your code and step through your scripts one line at a time as your animation runs in Preview mode. This considerably reduces the time taken to debug errors.

If you are still not impressed, then check out the all-new Flash UI components tool—it allows you to quickly and easily add simple user interface elements such as radio boxes, check boxes and drop down lists to your Flash document. As with Visual Interdev, once you have the element on the page, you can modify its parameters. These UI components can also be controlled programmatically with ActionScripts, which in turn can communicate with the server-side programming language.

In the previous version, the code generated by using ActionScripts was different and more complicated. To receive data from a server you had to use the 'LoadVariablesNum' action. However, in Flash MX it has been replaced with just 'load'. This will reduce the amount of coding time put in by expert coders who like to manually enter their code.



The Distort and Envelope tools allow you to warp and edit vector objects

Putting your Video on the Web

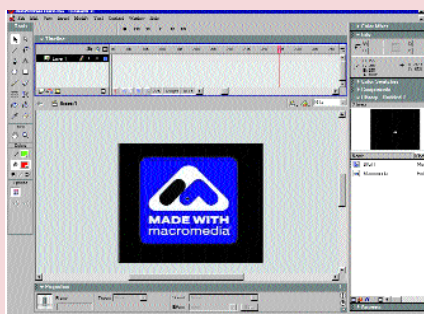
Converting your AVI, MPG and Quick Time files to SWF format before publishing them to your Web site can result in considerable space savings and visitors to your site will be able to watch the movie directly in their Web browser (provided they have the correct plugin).

STEP 1 Click **Insert > New symbol**. You will be prompted for the type of symbol you want to create. Select **Movie Clip** from the **Behavior** options.

STEP 2 Under **File > Import**, select the video file that you want to import. At the **Import Video** prompt, select 'Embed video in Macromedia Flash document' and click **OK**.

STEP 3 In the 'Import video settings' window, change the scale setting from 100 per cent to 80 per cent in order to compress the video to a decent quality. You can also adjust the quality of your video file—we have changed the default quality setting from 50 to 80. After the file is imported, click **Yes** to embed the video file on the timeline. Save the file on your PC.

STEP 4 Click on the **Scene 1** button that resides just below the **Timeline**



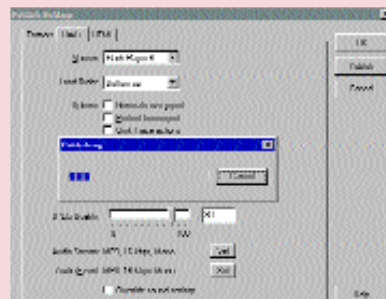
Select the imported movie from the Library panel and drag it to the work area

panel. Drag the movie clip symbol from the Library panel to the work area of **Scene 1** (the Library panel can be enabled by pressing [F11])

STEP 5 Reset the size of your work area to match the size of the imported video file by clicking on **Modify > Document** and set the **Dimensions** according to the movie size. The **Info** panel (enabled by pressing [Ctrl] + [I]) will show you the size of the imported video file.

STEP 6 Go to **File > Publish Settings** and select the **Flash** and **HTML** box in the **Format** tab. Click on the **Flash** tab and

with **Flash Player 6** selected from the **Version** drop down box, click on the **Publish** button.



Publishing your video

STEP 7 Browse to the folder in which you saved the Flash file. You will find that two files have been saved—one is in the **HTML** format and the other is an **SWF** file. Upload both files on your Web server using an **FTP** program (such as **CuteFTP**) and link the **HTML** file to any of the pages on your Web site.

Note: In case the video file is in **MPG/MPEG** or **QuickTime 4** format, it will not import the audio along with the movie in **Flash**. Even a video file of 1 to 2 MB will take at least 5-10 minutes to import on slower machines.

Developing rich Internet applications with **Macromedia Flash MX** is made easier with the addition of **Macromedia Flash Remoting** components. With **Macromedia Flash Remoting**, developers can easily connect **ActionScript** client logic directly to remote services without writing any extra code. It enables **Flash MX** to exchange data with remote services, including **ColdFusion** components, **EJBs**, **Java** classes, and **.NET** components and pages.



Sitespring allows for efficient project management amongst Web developers

To help ease development in highly managed production environments, **Flash MX** integrates directly with **Sitespring**, **Macromedia's** workflow manage-

ment server. **Sitespring** users can check content in and out, update status, and communicate with their teams without leaving **Flash**.

One major complaint from most users was that using too much **XML** code would kill the animation. This problem has been addressed and **Flash MX** uses **XML** more efficiently, resulting in smoother animation.

The verdict

So, is **Flash MX** truly worth the upgrade? The revamped user interface alone can provide a huge boost to your productivity, and the new design and development features are a big plus while developing either animations or rich media-based Web applications. However, in spite of these new enhancements, one wonders why there are no graphical tools to support basic 3D modelling. If you use **Flash** primarily as an animation tool, then there's no compelling reason to upgrade from version 5. **Flash MX** boasts huge functional advancements when it comes

Flash MX

Performance	▶▶▶▶▶
Ease of use	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Price: Rs 24,950

Contact: Macromedia

Tel: 91-22-8201706

Fax: 022-8365167

E-mail: shriram@macromedia.com

Web site: www.macromedia.com

SYSTEM REQUIREMENTS:

200 MHz Intel Pentium processor, Windows 98 SE/Me/NT4/2000/XP, 64 MB RAM (128 MB recommended), 85 MB hard disk space, 1024x768 resolution, 16-bit colour display or better, CD-ROM drive

to programming and if you intend to develop games, Web-based applications and multimedia interfaces, then you would definitely benefit from migrating to **Flash MX**. ■

MITUL MEHTA and MAYANK JAIN

Bazaar



We test the latest and the best hardware and software products available in the market

Epson Perfection 2450 Photo

Photo perfect!

The Epson Perfection 2450 Photo is a scanner aimed squarely at high-end graphics professional. It allows you to scan photographs and transparencies at resolutions of 2400x4800 at 48-bit colour depth.

The Epson Perfection uses a USB 1.1 interface and also has integrated FireWire functionality for faster data transfer. We found the installation effortless; Windows XP detected it immediately. It performed very well in the image quality test, producing an extremely crisp image with vivid colour reproduction. In the photograph test, it scored an impressive 9 out of 10 and had excellent tonal range, scoring 8 out of 10 in that test. The scanner completed the image preview in an amazing 6.6 seconds,



beating the previous record of 8 seconds set by HP ScanJet 5470C in our scanner comparison in the August 2002 issue. It performed exceedingly well in the resolution test too, scoring 4 out of 5 and lived up to its supported hardware resolution. With brilliant imaging qualities, this scanner is tailor-made for applications in design studios and for print production.

SPECIFICATIONS	
Resolution of 2400x4800, 48-bit colour depth, USB 1.1 and IEEE 1394 FireWire interface	
Epson Perfection 2450 B+	
Performance	▶▶▶▶▶▶▶▶▶▶
Build quality	▶▶▶▶▶▶▶▶▶▶
Value for money	▶▶▶▶▶▶▶▶▶▶
Features	▶▶▶▶▶▶▶▶▶▶
OVERALL	▶▶▶▶▶▶▶▶▶▶

Price: Rs 32,500
Company: Epson India Ltd
Phone: 080-5321266
E-mail: azra@eid.epson.co.in
Web site: www.epson.co.in

LITEON CD-ReWriter 40/12/48x

The fast and the furious

The LITEON CD-ReWriter requires fast media to exploit its true potential. We tested it with Imation's 40x compatible media. It wrote our 700 MB ISO file in a fast 3 minutes 44 seconds, beating

the previous record holder ASUS CRW-2410S by 17 sec-



onds. In the assorted file test, 650 MB worth of small files and folders with long file names were burnt in 3 minutes 20 seconds flat! Audio extraction speeds were pretty fast too—2 minutes to rip an Audio CD with 14 tracks totalling 64 minutes 2 seconds. At 40x write speeds, the writer burns data at an amazing speed of 6000 KBps. This can be a really high number to sustain for slower systems and

Price: Rs 4,200
Contact: Mediatech India
Phone: 022-2396696
E-mail: sales@mediatechindia.com

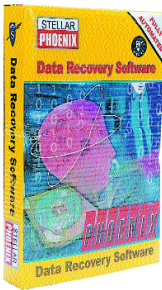
though the CD-ReWriter supports buffer underrun technology, we recommend a 7,200-rpm hard drive if you intend to burn at such high speeds.

SPECIFICATIONS	
ATAPI Enhanced IDE interface, supports up to Ultra-DMA Mode2 33.3 MBps, 80 ms (typical) access time, 2 MB buffer memory	
LITEON CD-ReWriter B+	
Performance	▶▶▶▶▶▶▶▶▶▶
Build quality	▶▶▶▶▶▶▶▶▶▶
Value for money	▶▶▶▶▶▶▶▶▶▶
Features	▶▶▶▶▶▶▶▶▶▶
OVERALL	▶▶▶▶▶▶▶▶▶▶

Stellar Phoenix

To data loss and back!

This tool allows you to recover data from a logically damaged hard disk. It offers recovery from accidental formats, partition loss, virus-related corruption, file/directory deletion, even total disk corruption. It can identify inaccessible drives, and locate and present all the partitions in a list. It need not be installed prior to a data loss incident and has no drive capacity limitation. Strangely, the product comes with a 10-count recovery limitation, limiting your usage. For further use, you will have to renew the licence. We tested the software by doing a quick format of a



partition; it showed us the exact tree structure of the directories and recovered all our data.

The software does have a few limitations though—it will not work if the drive cannot be detected in the BIOS. Also, if you accidentally perform a quick format and then write data onto the freshly formatted disk, the chances of data recovery are reduced dramatically.

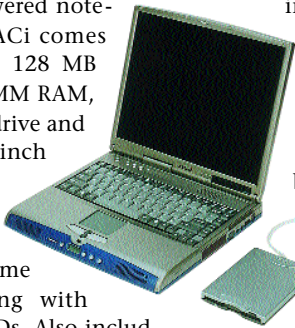
SPECIFICATIONS	
Minimum System Requirements: a working hard disk and floppy disk drive, 32 MB RAM (64 MB recommended), MS-DOS 5.0 or Windows 3.x/9x/Me	
Stellar Phoenix B	
Performance	▶▶▶▶▶▶▶▶▶▶
Ease of use	▶▶▶▶▶▶▶▶▶▶
Value for money	▶▶▶▶▶▶▶▶▶▶
Features	▶▶▶▶▶▶▶▶▶▶
OVERALL	▶▶▶▶▶▶▶▶▶▶

Price: Rs 4,000
Company: Stellar Information Systems Ltd.
Phone: 011-6418809
E-mail: sales@stellarinfo.com
Web site: www.stellarinfo.com

ACi Emerald

Mobile powerhouse!

This Pentium 4-M 2.0 GHz powered notebook from ACi comes packed with 128 MB DDR SO-DIMM RAM, 20 GB hard drive and a crisp 14.1-inch TFT screen. It comes with Windows XP Home Edition along with the driver CDs. Also included is a leather carry bag and an external USB floppy drive, which felt out of place in an otherwise compact notebook. It is fairly robust and the Lithium Ion battery ran for around 102 minutes in the BatteryMark 4.01 test. In Content Creation 2001, it scored a low 37.9, a score that could've been bettered by about 25 per cent if it had 256 KB of cache memory. A memory of 256 MB also becomes a necessity to run Windows XP



Home Edition smoothly. The integrated SiS 650 graphics chip with shared memory architecture of 64 MB supports a resolution of 1024x768 with 32-bit colour depth. We ran a VCD on it and there was no noticeable blur in the display and the speaker sub-system was pretty decent too. It can double up as an entertainment companion since it bundles a full duplex soundcard along with an RCA TV Out port.

SPECIFICATIONS

Pentium 4 processor, 128 MB DDR RAM, 20 GB hard disk, CD-ROM drive, USB floppy drive, SiS 650 graphics with shared memory up to 64 MB, one PCMCIA slot, four USB ports, one PS/2 port, one IEEE 1394 FireWire port, onboard 56K modem, onboard LAN

Price: Rs 89,990 + taxes
Contact: Allied Computer International (Asia) Pvt. Ltd.
Phone: 022-6366800
Fax: 022-6366356
E-mail: sales@aci-asia.com
Web site: www.aci-asia.com

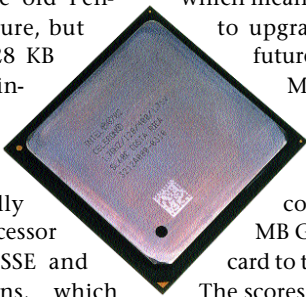
ACi Emerald

Performance	▶▶▶▶▶
Build quality	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Intel Celeron 1.7 GHz

Old P4 in Celeron clothing

The new Celeron 1.7 GHz is based on the old Pentium 4 architecture, but features only 128 KB of L2 cache, hindering the exploitation of its full potential. Thankfully though, the processor features MMX, SSE and SSE2 instructions, which assist in multimedia applications and gaming. Even though it uses the older 0.18 micron manufacturing technology, it uses the new Socket 478 interface, allowing it to be used on the same boards as



the Northwood Pentium 4, which means you will be able to upgrade easily in the future. We used a 256 MB DDR SDRAM with an Intel D 8 4 5 G B V motherboard coupled with a 64 MB GeForce3 graphics card to test the processor. The scores were disappointing: the processor could not keep up with the GeForce3, severely bottlenecking the gaming and multimedia benchmarks. This was most apparent in the *Quake III Arena* test where the average

frame rates in Normal, High and Maximum modes were a playable but not too impressive at 74.2, 74.5 and 68 fps respectively. In the FPU-intensive POV-Ray test, the Celeron 1.7 GHz took a staggeringly long time of 6 minutes 43 seconds.

The new Intel Celeron is not recommended if you are heavily into 3D gaming and

professional 3D applications, but will be satisfactory for your day-to-day office applications and for running general desktop software that aren't too taxing on the processor.

SPECIFICATIONS

1.7 GHz clock speed; 128 KB L2 cache; Socket 478 interface; Willamette core (0.18 micron)

Intel Celeron 1.7 GHz

Performance	▶▶▶▶▶
Ease of use	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Price: Rs 5,925

Contact: Nebula Technologies

Phone: 022-6730567

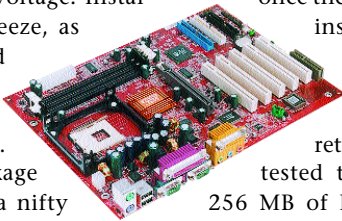
E-mail: sandip@nebulatech.com

Web site: www.intel.com

MSI 845E Max2-BLR motherboard

MSI to the max

This motherboard packs in a number of features including a plethora of over-clocking options such as FSB adjustments up to 233 MHz, AGP over voltage and DDR SDRAM over voltage. Installation is a breeze, as the board sports no jumpers or dipswitches. The MSI package also features a nifty utility called Fuzzy Logic4, which takes complete control of the overclocking process and finds the safe limits for a successful overclock. It is further packed with six USB ports, D-LEDs (Diagnostic LEDs), onboard LAN, onboard six-channel audio, onboard RAID (0+1), USB 2.0 functionality and a rock solid 845E chipset implementation. Sporting an unconventional blood red colour, the special heat sinks mounted on the MOSFETs (Metal Oxide Semiconductor Field Effect Trans-



istor) makes this board stand out among the rest. The only problem is the placement of the AGP slot and the DIMM slots; you won't be able to add or remove any RAM modules once the graphics card is installed since the AGP card will block the DIMM slot retention clips. We tested the board with 256 MB of DDR SDRAM, a Pentium 4 2.53 GHz processor coupled with a GeForce3 graphics card. The scores almost matched up with our RDRAM-powered test machine using the same processor. It scored an impressive 7381 in 3DMark2001SE and 162.6 fps in *Quake III Arena* at maximum settings.

SPECIFICATIONS

845E chipset; Socket 478 processor interface; support for 266 MHz DDR SDRAM; integrated six-channel audio, RAID (0+1) controller and USB 2.0

MSI 845E Max2-BLR

Performance	▶▶▶▶▶
Build quality	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Price: Rs 10,000

Company: Priya Ltd

Phone: 022-2663611

E-mail: salesbom@priyagroup.com

Web site: www.msi.com.tw

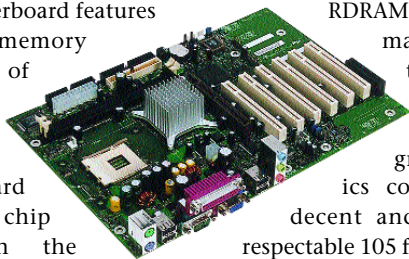
Intel D845GBV motherboard

845 ways to P4 integration

The Intel D845GBV motherboard is based on Intel's 845G chipset, which supports Intel processors based on the Socket 478 interface. The motherboard features a DDR memory interface of speeds up to 266 MHz, an onboard sound chip based on the Analog Devices AD1981A chipset and an onboard video chip based on Intel's Extreme graphics controller. It also integrates a network adapter. This makes it an ideal package for those with a limited budget, but who are still in need of a feature-rich solution. This board has one AGP, six PCI and one CNR slots, along with two DIMM sockets. It also supports a USB 2.0 port and 2 GB of DDR memory.

We tested this motherboard with a 2.53 GHz processor.

Price: Rs 8,120
Contact: Nebula Technologies
Phone: 022-6730567
E-mail: pradip@nebulatech.com
Web site: www.intel.com



It scored an impressive 63.2 in the Business Winstone 2001 test. In the Content Creation 2001, it achieved 89.3, almost matching the RDRAM-powered test machine using the same processor. The integrated graphics core is pretty decent and it scores a respectable 105 fps in the normal resolution in *Quake III Arena*.

The board is an excellent buy if you are looking for an ultra fast DDR solution and don't intend to buy a graphics card but want room for future upgradability.

SPECIFICATIONS

i845G chipset, support for Socket 478-class processors like Celeron and Pentium 4, 266 MHz DDR SDRAM memory interface, integrated graphics and audio

Intel D845GBV	
Performance	▶▶▶▶▶
Build quality	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Microsoft Project 2002

Manage your projects to perfection

Microsoft Project is the world's leading project management program and this new release brings more intuitive tools and built-in project management assistance. It includes a new step-by-step interactive project guide that helps you set up a new project, manage tasks and resources, track schedules and report project information.



It has improved grouping and information displays within the network diagram (which shows you all the tasks in a graphical manner) and new smart tags that alert you to alternative scheduling choices when you make changes to your project plans. You can now import task lists from Microsoft Outlook or save multiple baseline estimates for any project. This software will be appreciated by everyone, from small companies to large

organisations that work on tight deadlines and have enormous number of tasks spanning over a number of years.

Price: Rs 50,000
Contact: Kemptron Systems
Phone no: 011-6286258
Fax no: 011-6286260
E-mail: kemptron@del3.vsnl.net.in
Web site: www.microsoft.com/products

Sun StarOffice 6.0

New star on the horizon

Sun's office suite comes packed with all the standard office productivity tools—word processor, spreadsheet, presentation, drawing, formula-design and HTML-editing applications. This version opens and saves Microsoft Word, Excel, and PowerPoint



files, and the disk requirements are modest. Installing it is easy and automated and can take up to 230 MB. In addition, it installs several fonts, which will replace the existing ones in Windows, but the installation process gives you the option of retaining your original fonts.

It offers over 130 templates, backgrounds, and formats, from business letters to full-blown thesis formats. When editing large documents, the Master Document lets you create styles for multiple files. The Spreadsheet software is fairly competent

Price: \$75.60 (approx Rs 3,750)
E-mail: csr-customer-service@sun.com
Web site: www.sun.com

SPECIFICATIONS

Minimum System Requirements: Windows 98/98 SE/NT 4.0 with SP6/Me/2000, 234 MB hard disk space, 112 MB RAM Pentium 133 MHz processor, mouse or compatible device, CD-ROM drive, SVGA monitor

Microsoft Project 2002	
Performance	▶▶▶▶▶
Ease of use	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

too. When we imported our comparison test tables and formulae-filled Excel files, conversion was almost perfect. Note that these files were created in Microsoft Office 2000/2002; results could vary with older versions.

We also imported several large PowerPoint files with generally good results, though we noted some errors in the reproduction of text formatting. As with Microsoft PowerPoint, you have control over the speed and timing of shows, you can select from a wide range of transitions, and there's a thumbnail page for an overall view. All-in-all, StarOffice 6.0 is an impressive package. It contains features you use every day and some you'll never touch, all at a reasonable price. However, the full download version of StarOffice 6.0 can only be used for a single operating system.

SPECIFICATIONS

Minimum System Requirements: Windows 95/98/ME/NT/2000/XP, Pentium/Athlon processor, 64 MB RAM, 250 MB hard disk space, 800x600 or higher-resolution graphics card with 256 colours

Sun StarOffice 6.0	
Performance	▶▶▶▶▶
Ease of use	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Cakewalk Club Tracks

Piece of cake

Musicians may be laying down tracks but it's the DJs who add flavour to your music experience.

Club Tracks from Cakewalk is a perfect multi-track remix studio for generating Techno, Hip-hop and other kinds of club music. The software puts the creative power in the user's hand, letting you create your own mixed versions, built from layers of Fruity-Loops Express rhythm samples or recorded samples from CDs, or even your own tracks. Unlike other programs, this one is fairly simple to use and offers three different views to work with. The Edit view allows you to drag and drop tracks onto the mixing palette whereas, the Mix view has virtual sliders, pans and other



studio console control knobs to manipulate the track. The mixer allows you to add a final dash of reverb, echo and delay, chorus or flange effects. It includes a 30-day trial version of Cakewalk Pro that can be used to export your creations to MP3 files or to CDs—provided you already have the necessary CD writing hardware.

In totality, Cakewalk Club Tracks provides all the ingredients needed to produce professional-sounding dance tracks at a very affordable price.

SPECIFICATIONS
Minimum System Requirements: Windows 95/98/Me, Pentium-class 200 MHz processor, 32 MB RAM, 800x600 video display, Windows-compatible sound-card, CD-ROM drive

Price: Rs 975
Contact: Microware Computer Services
Phone: 022-8729725
Fax: 022-8727446
E-mail: sales@mwcdrom.com
Web site: www.mwcdrom.com

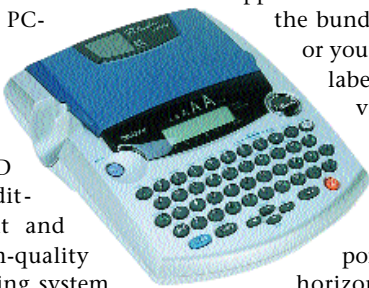
Cakewalk Club Tracks	
Performance	▶▶▶▶▶
Ease of use	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Brother P-Touch 2300 label printer

Label this!

The Brother P-Touch 2300 is a PC-compatible electronic labelling system. It has a small LCD display for editing your text and uses a high-quality thermal printing system.

It supports text framing and underlining, and also has support for foreign language symbols. It prints on a 0.25x1 inch wide label suitable for any home or commercial



application. You can use the bundled keyboard or your PC to create labels in nine varying styles and eight different point sizes (up to 52 points). Vertical, horizontal and mirror printing are also supported. The printer has a 300-character memory, auto-numbering and repeat printing (one to nine copies) and also features an automatic tape

cutter. The package comes bundled with one labelling unit, two 12-mm tapes, auto-transformer, USB connector, PC software and a tape separator. The device gets detected the moment it is plugged to the USB port and the bundled CD installs the driver for the labeller and application without asking for any restart. In the absence of a PC, the unit can also be used with eight

Price: Rs 14,900
Contact: Brother International
Phone: 022-5797470
E-mail: rsa_brothers@vsnl.com
Web site: www.brother.com

AA batteries. The P-Touch 2300 labeller is a compact, easy-to-use device that can serve a vast range of functions from file labelling in offices, to labelling products in shops and even to bring some order into your home!

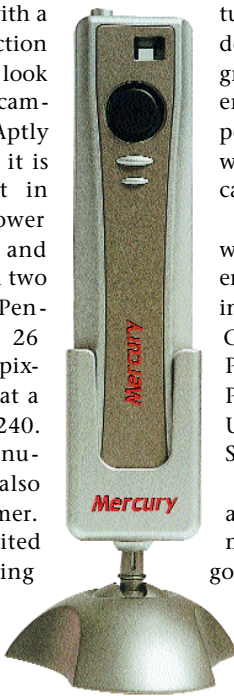
SPECIFICATIONS
USB 1.1 compliant, 12 mm tape, 9.5-volt DC power supply

Brother P-Touch 2300	
Performance	▶▶▶▶▶
Build quality	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Mercury 3-in-1 PenCam

Finger-sized photography

If you are blessed with a broadband connection at home, then take a look at this three-in-one camera from Mercury. Aptly called the PenCam, it is light and compact in design. It draws power from the USB port and can also function on two AAA batteries. The PenCam can capture 26 images at 640x480 pixels and 107 images at a resolution of 320x240. It's capable of continuous shooting and also features a self-timer. However, it isn't suited for serious imaging applications since the picture gets a little grainy at 640x480, but can be used to record movies in the AVI format. It also doubles up as a Web cam—the streaming quality is good, but the camera has to be kept focused on the user's face. The rectangular shape of the camera makes it difficult to take pic-



tures and the stand doesn't have a good grip, causing the camera to slip from its position due to the weight of the USB cable. It comes bundled with PenCam Manager, Microsoft NetMeeting, VideoMail, Ulead Cool 360, Ulead Photo Explorer, Ulead Photo Express and Ulead Video Studio SE. Its relatively affordable price tag makes this camera a good option if you are looking for a basic, portable and fun digital imaging device.

SPECIFICATIONS
CMOS sensor (approx 330 Kpixel), USB interface, support for 640x480 and 320x240 resolution, 54-degree view angle

Price: Rs 3,000
Contact: Visualan Technologies
Phone: 022-8202688
E-mail: sales@visualanindia.com
Web site: www.kobian.com

Mercury 3-in-1 PenCam	
Performance	▶▶▶▶▶
Build quality	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Write Said Fred

Our beloved agent snoops around Lamington Road, investigating the price drop in CD-Writers

I upgraded to a 40 GB hard disk drive recently, but the data bloat has caught up with me already. My wallet doesn't allow me to buy a bigger hard disk, so I suppose it's time to invest in a CD-Writer and transfer my treasure of MP3s and DivX movies on to CDs.

We did a CD-Writer comparison for our February 2002 issue, but since then, much has changed. The writing speeds have almost doubled and prices have crashed to a point where you can get a speedy CD-Writer for less than Rs 4,000. The change is coming on fast and vendors are getting rid of older Writers at unbelievable prices.

The top CD-Writer speeds have nearly tripled since the beginning of this year, going from 16x to 40x, and 48x Writers are expected later this year.

Buffer underrun technology (which protects discs during writing) has become the norm, and the average price for a leading-edge drive has fallen from Rs 7,000 to Rs 4,000 within a matter of months.

I've been trying to make informed decisions lately, trying to get the best buy within a reasonable budget, so it was with only Rs 5,000 in my pocket that I made a trip to Mumbai's Lamington Road.

I must apologise for being so Lamington Road-centric, but it's the Sensex of the Indian hardware scene—Lamington Road is where you can benefit from temporary price drops, market fluctuations and vendor dumping. For enthusiasts in Gawhati and Chennai, the benefits will take a little longer to trickle down.

The first brand that I came across was a 32x Krypton



■ The right brand of CD is as important as the CD-Writer. Cheap CDs might last for a few years, but for long-term storage, use brands such as HP or Sony.

■ CD prices have dropped as well; you can pay as low as Rs 12 a piece if you buy in bulk.

■ CD-R capacities have increased from 650 MB to a whopping 800 MB.

■ CD-RW (the CD re-writeable) is the ideal replacement for the floppy. RW media can be used up to 100 times and costs only Rs 120.

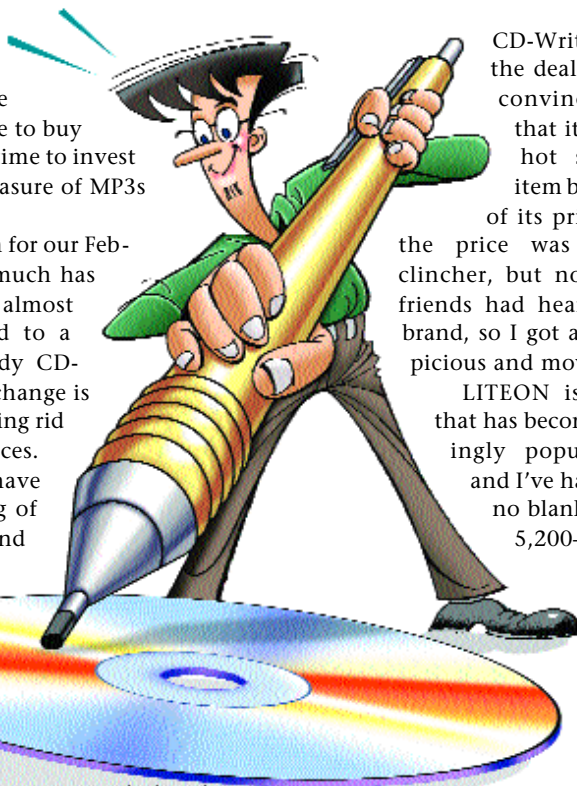


ILLUSTRATION: Mahesh Benkar

CD-Writer, and the dealer tried to convince me that it was a hot selling item because of its price. Yes, the price was really a clincher, but none of my friends had heard of this brand, so I got a little suspicious and moved on.

LITEON is a brand that has become increasingly popular lately


and I've had several reports that this Writer spews no blanks. I found a LITEON 40x Writer for Rs 5,200—definitely one of the fastest I've seen so far, but there's a caveat—as the drives become faster, the benefits shrink. A 24x might burn a CD in 3 minutes, but the increase in speed beyond that is negligible.

I found another cheap brand, Benq, which offered a 32x CD-Writer for Rs 3,900 and a 40x CD-Writer for Rs 4,800. I'd heard good reports of its burning

speeds. Sony's 40x CD-Writer is available for around Rs 4,000-4,500. And Samsung has a 24x selling for only Rs 3,200! Their 32x and 40x CD-Writers were priced at Rs 4,000 and Rs 5,200 respectively.

Next, I came across a Plextor, the mother of all CD-Writers—these drives come at a premium. Plextor is to CD-Writers what Rolex is to wristwatches. The PlexWriter W4012TA burns CDs at 40x (under 3 minutes) and was available for Rs 10,800. Their combo drive (CD-RW cum DVD-ROM drive) with 20x write and 12x DVD speeds was available for Rs 11,400. Plextor's 48x speed drive, the fastest drive I've seen so far, was for Rs 12,950.

Speed is not all that sells a CD-Writer; brand name is worth quite a lot, as is the brand positioning of the Writer. If you stretch your budget a little bit, you can get an SM-308 Samsung (8x CD-Writer cum 8x DVD drive) for a cool Rs 5,200. The SM-316 (16x CD-Writer cum 12x DVD drive) is available for around Rs 6,000. These models have been marketed as a three-in-one combo, and have generated a lot of excitement. External drives for the portable Writer cost more than Rs 10,000 (Benq had a 24x for Rs 10,000, and a 40x for Rs 11,000). Plextor's W2410TU external USB drive was going for Rs 15,000.

After a long day's work, I opted for the Samsung 24x—it costs only Rs 3,200 and meets my requirements perfectly. With stocks disappearing like hot cakes, now is the time to grab that Writer. Go get one before it's too late. 

ReWrite choice



An external CD-ReWriter used to cost nothing less than Rs 15,000, but you can now get one for half the price! The fully USB 2.0-compliant LITEON 24x10x40x external CD-ReWriter is available for a throwaway price of Rs 7,195.

To stop a

Content companies struggle to safeguard their content even as crackers find new methods of defeating them. In the end, it's the consumer who pays for products that don't work

Content is king, and nowhere more so than in the entertainment industry. It brings in the money, reins in the audience and is thus zealously guarded by the corporate moguls of the music and movie world. Lately, technology has been the prime cause of angst for these sectors. A rise in music and motion picture piracy has been directly blamed on advances such as the rise of the Internet, the advent of efficient compression technologies and the falling prices of both CD recorders and recordable media. Experts in these industries readily blame the fall in the sales of their products on these factors. Hilary Rosen, president and chief executive officer of the Recording Industry Association of America (RIAA) has this to say about the scenario: "A large factor contributing to the decrease in overall shipments of music CDs is online piracy and CD burning. Global piracy on the physical side costs the recording industry over \$4 billion a year." The music industry was especially caught off-guard by the spread of MP3 files on the online service, Napster. Peer-to-peer services such as

Gnutella and KaZaA have had a similar impact on the movie industry—pirated copies of DVD movie discs trickle down from the Internet and appear in potential markets much before the release of the feature film in cinema halls.

To consolidate their position and market share, both these industries have taken measures to dampen the technological fallout and ensure that such scenarios do not repeat themselves. One such measure is the use of copy-protection technologies to guard their valued content against would-be pirates. Join us as we take a look at how copy protection techniques used on both CD-ROM and DVD-ROM drives are affecting the buying public and how they are implemented.

Wherever you may ROM

A CD is ubiquitous; it brings us entertainment in the form of video CDs, audio CDs and games. Content on this medium is also the most pirated. A survey suggests that sales of CD recorders have tripled since 1999, that there are approximately 29.9 million

unauthorised CD-ROM copies in US households, and that almost half of the software copied are games, with educational software coming in at a close second. The paranoia over protection of media has spawned an entire industry that aims to provide solutions to the content generators. Some of these schemes bend the standards that are laid down for the production of CD-ROMs. Some even go as far as breaking them. The issue is real enough to have caused Philips (the co-creator of the CD-ROM standard) to raise concerns that users might be buying discs that are not 'true CD-ROMs'.

Breaking the standards: The easiest means of content protection involves increasing the size of the CD medium.

Dummy files, which merely act as pointers to other files on the CD are used to do just this. This way the CD is made to look bigger than it is—greater than its standard 600 MB capacity, and any attempt to copy files from the CD to the hard disk (a process that some pirates use



According to the International Planning and Research Corporation, the losses due to software piracy in 2001 amounted to \$10.97 billion

to copy content) will fail. This is because the CD will appear to hold data that exceeds its capacity and the OS will refuse to copy the files. The application that uses the content on the CD has pre-knowledge of the nature of the copy-protection scheme used. It thus knows the true length of the files involved and the CD works as intended. This was one of the first methods used and is no longer effective, thanks to the prevalence of 80-minute CD-R media and the arrival of software that lets you overburn a CD—that is, attempt to write more content on a CD than what it can actually store. Other protection techniques create an illegal Table of Contents (TOC) to similar effect, i.e., making a disc appear larger than it actually is. (Every CD-

data that is being read or transmitted to and from a CD-ROM to be checked for errors and, when necessary, corrected on the fly. It differs from parity-checking in that errors are not only detected but also corrected. To guard the content of an Audio CD, the ECC data present is scrambled to appear as a non-correctable error. When an Audio CD is played on a computer system, the data is transported from the CD-ROM drive to the soundcard via an analogue path. Along this path are logic elements that are designed to detect any errors and use software techniques to smoothen out the flawed audio. When an audio track is copied through a CD-Writer however, the data takes a digital path meant for generic non-audio data. The

“We’re working very hard to make buying music as easy as stealing music. And we’re also working hard to make stealing a hell of a lot harder”

— Jay Samit,
EMI's senior vice president

ROM has an indexed listing of its contents that forms the TOC). Other methods use a non-standard means of storing data on the CD. Data is stored on a CD in the form of tracks. To protect Audio CDs, atypical gaps between audio tracks or the use of tracks with an uncommon length of less than 4 seconds are used.

Introduction of errors: Some CD-ROMs are physically damaged by a line or a ring across the data track to protect their content. Most CD-Writers are not able to copy data from a medium which has this kind of an error. Other protection schemes introduce errors while mastering a CD-ROM disc. The application that is meant to use the CD, checks for the anomaly and will accept the CD as a legitimate version only if the introduced errors are present. If someone tries to copy the CD, the writing software will use its error-correction facility to correct the inaccuracies that were introduced during the mastering process. The copy will then be faultless, but the application will fail to detect the error and will thus refuse to run. This form of protection is generally used in CD-ROMs containing non-audio data content.

A somewhat fancier method of introducing a protection scheme on an Audio CD involves changing the ECC (Error Correction Code) information. ECC allows

error correction is absent along this route and thus the original error that was introduced remains. This error comes across as scratching and hissing noise in the copied audio track. Newer writers use data correction at lower speeds and this protection method can be thus bypassed.

Encryption: Encryption technology has been successfully used as a means to safeguard content. The main executable files on a protected CD-ROM are first encrypted using a special digital signature. The signature is then mapped to a software decryption key. The decryption will thus only happen if the signature is present. The required protection is offered by the fact that the digital signature is not reproducible by either counterfeiting (re-mastering) or disc burning. When an authentic disc is used, the signature is present, decryption occurs and the application runs. A pirate who attempts to replicate such a disc will only be able to copy its content and not the embedded signature. When a copy is thus used, the signature is not present, no decryption occurs and the application does not run.

Inherent protection: Every CD has important information on the disc itself which is called ATIP (Absolute Time In Pre-groove, or pre-groove for short). The ATIP contains information that indicates the

Foiled again!

Code Breaker

A software to decrypt content scrambling system (CSS), called DeCSS, was released in October 1999. The DeCSS information can be used to guess the master keys that form the base of CSS protection scheme, a move which is considered illegal under the Digital Millennium Copyright Act (DMCA). On January 14, 2000, the seven top US movie studios—Disney, MGM, Paramount, Sony, Time Warner, Twentieth Century Fox and Universal—backed by the Motion Picture Association of America (MPAA), filed lawsuits in an attempt to stop the distribution of DeCSS on Web sites. On January 24, 2000, 16-year-old Jon Johansen, the Norwegian programmer who first distributed DeCSS, was questioned by the local police who raided his house. Johansen said that the actual cracking work was done by two anonymous European programmers, who called themselves Masters of Reverse Engineering (MoRE). But the cat was already out of the bag as the DeCSS code was made public during the court proceedings. It can now be found on the back of T-shirts everywhere!



Marked as Defeated

A copy-protected Celine Dion album offended music lovers around the world as it hung PCs and crashed some iMacs so hard that they had to be serviced by dealers. Use of a mixed-mode disc (containing both audio and data) was identified as the cause of the problem. By simply masking the second Table of Contents on the disc (which appears as a thin ring on the recorded surface, about half an inch from the outer edge), music-buffs bypassed the protection scheme. The masking was done via decidedly low-tech means—by using a black marker pen!



capacity of the CD, the manufacturer of the medium, supported writing speeds, last possible address where data can be written, etc. Only a CD-Writer can read the pre-groove, since this information is only needed when writing a CD. When an application starts, it checks whether the ATIP information is present. If it is, then the program assumes that it is running on a CD-Writer and will refuse to run. If however, the same CD is put in a normal CD-ROM drive, the ATIP information will be invisible to the application and it will run normally. A disc using this means is thus prevented from running on CD-Writers.

Save thy DVD

DVD content has been relatively safe till date. A copied DVD movie runs in excess of 1 GB of space. Compared to the 3 to 5 MB that a typical audio file takes up when compressed as MP3, it is an unruly size to say the least. Thus, movie distri-

and can thus continue to tag a protected content.

Content Scrambling System (CSS):

This is a data encryption and authentication scheme intended to prevent copying video files directly from DVD-Video discs. The content is stored in a scrambled state on a DVD-ROM disc. Every DVD player is coded with a small set of player keys which identify that player as an authorised CSS playback mechanism. These keys are provided by the DVD licensing authorities for a sizeable fee. Once a DVD disc is inserted into a DVD player, the disc and the player exchange information and if the player key is valid, the disc unlocks a title key. The title key is then used to unscramble the data on the DVD. The actual process of content protection thus involves the validation of a DVD player, rather than that of the medium.

info BBC reports that Napster, the online music swapping service, had an estimated 60 million users at the height of its use

RealOne. Nor could the digital files be played on anything other than a Windows operating system. Other copy protection efforts have run into trouble with the public.

Natalie Imbruglia's music album, *White Lilies Island*, used an encoding process to protect its content. This process corrupted the music stored on the disc. A hi-fi CD player's error correction mechanism was meant to compensate for the corrupt data and recreate the sound to a level that was claimed to be undetectable by the listener. Put the CD into a PC, however, and the drive would pick up the corrupt content and claim the disc to be unreadable. The furore created by this move forced BMG, the distributors of the album, to issue unhappy consumers with replacement discs that lacked the offending technology.

Cases like these are not limited to the music industry. Game distributors

“The consumers started getting back saying that it doesn't play on car CD players and several types of normal players. We were really shocked...”



— Mathias Immel,
Head of product coordination and new media at BMG, Germany

bution over the peer-to-peer networks that lace the Internet is not as brisk an activity as music-swapping. The movie industry thus has some breathing space to come up with a viable solution before things take a turn for the worse for them.


Watermarking: DVD audio is copy-right protected by a digital watermark. Signal processing technology is used to apply a digital signature (and optional encryption keys) to the audio. Watermarking permanently marks each digital audio frame with noise that is supposedly undetectable by human ears. An attempt to copy a watermarked DVD will fail in recreating the signature. Equipment that support this technique will recognise copied audio (by virtue of the absence of added noise) and refuse to play it. Watermark signatures can be recognised by playback and recording equipment to prevent copying. Even when the signal is transmitted via digital or analog connections or is subjected to video processing, the watermark is retained

The fallout

What can be made can just as easily be broken. There is a silent war going on between the content creators and the crackers. While the former strive to keep one step ahead of the race, the latter would like nothing better than to rub the noses of the giants in the dirt, by defeating their protection schemes. Caught between the two is the end-user. These efforts for media control have had an immediate repercussion on the buying public.

Music lovers, for instance have been forced to return CDs of their favourite artists because the media would not play on their computer systems. Take the case of the soundtrack for the movie *The Fast and the Furious*. Media giant, Universal, tapped a copy-protection technology to lock up on ordinary CD audio files. These songs, which appeared to be MP3s or related to MP3s, could not be played through common media players such as Windows Media Player, Winamp or

have opted to use copy protection schemes such as Macrovision's SafeDisc and many a gamer has found himself on the receiving end of the problems caused by such solutions: games bought off store shelves refuse to run on their computer systems because they have older CD-ROM drives. The authentication process also takes up system resources and slows down a gaming session. Some of the games have also been known to cause frequent system crashes.

Situations like these are a common occurrence and will continue to plague the buying public. It is thus the end-user who finds himself caught between the horses of pirates and copy-protection schemes. But perhaps the key lies with the consumer himself—if he is made aware of the evils of piracy and is encouraged by the content owners to buy the real deal, there will be no need to employ schemes with potential pitfalls. Until that happens, the industries involved will always try to find solutions to protect their content and keep the customers happy...and they will always fail! 

AHMED SHAIKH

info The Interactive Digital Software Association estimated that the piracy of games amounted to a loss of over \$3.2 billion worldwide



GRAPHIC DESIGN: Mahesh Benhar PHOTOGRAPH: Jiten Gandhi

The Entertainers

Must-have software for playing, encoding and managing audio and video on your PC

If the PC is where your entertainment is, here is a way to enhance the experience. Each of these hand-picked software is easy to use and provides several features to pump up the capabilities of your system for a smooth playback, high-quality recording and encoding, and smart media management.

Music on your desk

A relatively recent development, online radio came up around a year ago, when broadband was just making an appearance. Spinner 4.0 (www.spinner.com) is a free online music player with thousands of songs categorised into over a hundred channels. You can choose from Techno, Country, Hip-Hop, Latin, etc and enjoy a continuous stream of music right on your desktop, without installing an additional software or plugin. It also hosts a feature that gives you complete information about your favourite artiste or song.

MP3 players are increasingly becoming the popular carriers of music for those on the move. But you need to convert your music into MP3 format first and you can't trust just any software to do that. You need high-quality conversion that

will optionally encode MP3 files with variable bitrates, if your player supports it. AudioCatalyst 2.1 (www.xingtech.com) converts audio CDs to MP3s in one easy step and incorporates a player and playlist manager. It's very fast and features several functions for enhancing the audio. You can also use AudioCatalyst for encoding MP3s from other file formats such as WAV.

Winamp (www.winamp.com) needs no introduction; you're probably playing it on your desktop right now, and if you aren't, waste no time! Not only does this very light player have an excellent suite of features, but with its support for plugins, it's scalable to any level. The latest version, Winamp 3.0 (currently in beta stage), supports video playback, making it a complete multimedia suite! There are virtually thousands of plugins available

Find it on the Mindware CD
under Software > Multimedia

Spinner 4.0, AudioCatalyst
2.1, Winamp 2.80, PowerDVD XP 4.0,
SmartRipper 2.41, aMPEG2Avi GUI 2.5
Beta 1, EasyDivX 0.82, TMPEGEnc
2.57.41.146, VCD Cutter 4.03, MUSIC-
MATCH Jukebox 7.2, eDonkey 6.1



for Winamp already, such as SqrSoft Advanced Crossfading Output, which ensures hours of uninterrupted music. It automatically detects the end of an audio stream and the beginning of the next track on your playlist, and cuts out the silence between them. The Gapless Audio Output plugin also provides the same feature. With the MP3 Output plugin, you can encode MP3 files directly from Winamp, which means you don't need a separate tool for ripping CDs. The Output Stacker plugin lets you use multiple output plugins together. This is very useful for a perfect audio experience, since no single plugin has all the enhancement features. Thus, you can mix the Crossfading Output plugin with the Direct-Sound output plugin and save money on a DJ at your next party. Or better still, use the DJamp plugin that uses Microsoft Agent and Text To Speech technology to provide an animated talking DJ—when Winamp finishes a song, DJamp displays a character that says a few words before playing the next song. The comments are configurable and can be in sequence or random.

Video for your PC

If you have a DVD player, get the CyberLink PowerDVD XP (www.gocyberlink.com).

Anatomy of Codecs

A codec (encoder-decoder) is an algorithm used to compress and decompress a file. Multimedia files in raw format are unmanageably huge. Unlike regular compression algorithms, codecs compress a file, yet allow them to be played back in regular media players—the decoder is bundled with the encoder, so the player simply picks up the correct codec for decoding the media file on the fly while it is playing. Again, unlike compression algorithms, codecs do not completely preserve the original image, audio or video—some parts of it are dropped to save space. Thus, as more data is dropped, so is the quality and file size. GIF and JPEG are compression algorithms for bitmap images. There are several codecs for audio and video, but the best ones are MP3 (MPEG II Layer 3) for audio and DivX (www.divx.com) for video. These afford the highest quality playback with compression ratios averaging around 10:1 (a 10 MB raw file can be compressed to a 1 MB encoded file without much noticeable loss in quality).

MUSICMATCH Jukebox

MUSICMATCH Jukebox (www.musicmatch.com) is a complete multimedia suite for all your audio requirements. You can play, rip and burn MP3s and audio CDs, and transfer songs to MP3 players. It can even record from tapes! mp3PRO

enhances the music quality in real-time. The software supports creation of CD labels and inlay cards with up to 150 track titles. You can even broadcast your playlist. The song catalogue and media management features are probably the

best—Super Tagging gives you faster, more accurate results for finding information about your tracks. You get names of

your favourite artistes, tracks and albums, and you can even automatically search and



The complete audio solution for your desktop

tag your tracks in just one click.

MUSICMATCH can keep track of all your downloaded files by monitoring certain folders. You can now set up multiple folders to synchronise with your music library.



Enhance your movie experience with PowerDVD

This is probably the most versatile DVD player with a whole load of features. This completely skinnable player supports DTS Digital Surround Sound and Dolby Pro Logic II to deliver the most rich and lively 5.1 channel audio experience, even if the original source was not encoded for 5.1 channel output. The evolved screen-capture feature lets you save high-quality snapshots from video. PowerDVD XP supports all current DVD formats such as DVD Video, DVD Video Recording, cDVD, miniDVD, etc. It can also play back video files from DVD-ROM, DVD-

ROM/RW combo, DVD-RAM, DVD-R/RW and DVD+RW drives.

You can avail a whole suite of software from www.afterdawn.com/software/, especially cool utilities for ripping DVDs. SmartRipper is a free DVD ripper that can extract VOB files from DVDs. It comes with an easy interface and automatically detects and reads the DVD, calculates the required drive space, splits VOB files per chapter and more. It also displays statistics such as length, size, and bitrates for every chapter or selection. aMPEG2Avi GUI is a great package for converting VOB files to AVIs. It contains pretty much all the software required for DVD to DivX

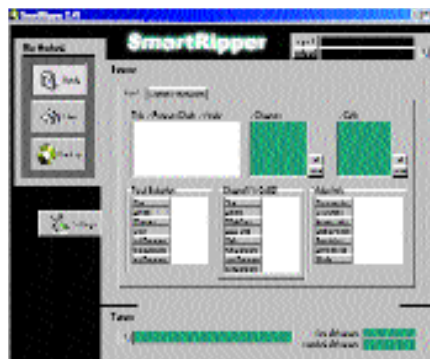


DivX: an easy way to encode video

conversion from DVD rippers to bitrate calculators.

EasyDivX (easydivx.does.it) is a free tool that encodes AVI files using the DivX codec. It supports DVD ripping and conversion to DivX AVI, MP3 or AC-3, making it a must-have for anyone who wants to rip DVDs, store movies on the hard disk or burn them on to CDs.

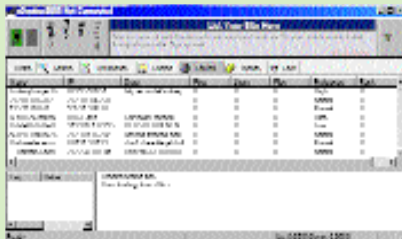
For burning VCDs, you just need the



SmartRipper rips DVDs to VOB files

Sharing Media

A relatively recent development, P2P tools allow you to share music, videos and other files over the Internet. eDonkey (www.edonkey.com) is one such network with millions of users worldwide. The network monitors media across all sub-



Peer-to-peer file-sharing with eDonkey

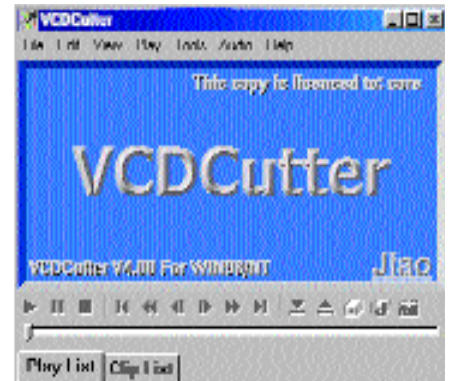
scribers, so all you need to do is install a client, search for what you want, select one from the results and download it. The file will be downloaded directly from the person who has it. This is extremely convenient and fast, since files don't need to be hosted on an Internet server first and the software unobtrusively downloads files in the background.

movie in MPEG-1 format. For this you can use TMPGEnc (www.tmpegenc.net), a free tool that converts almost any movie to this format by just selecting the input file and one of the available templates that has default settings for the kind of output file. The conversion speed depends on the PC configuration, the movie length and frame complexity. Almost any CD burning software can burn the MPEG-1 file to a VCD that can be played on standard VCD players. Nero Burning ROM (www.nero.com) is one of the best CD writing applications around. Launch the software and a wizard guides you through the CD creation process in just a few clicks. Select VideoCD as the CD type, drag the movie file into the project and Nero will take care of the rest.




Encoding movies with TMPGEnc

Ripping VCDs is a different ball game. VCD Cutter (www.seller-club.com/~vcdcut/) saves the entire movie or parts of it on the hard disk and scales the movie size. It can also save just the movie audio or merge a video source (M1V file) with an audio source (MP3 file). It has a built-in AVI to MPEG converter



VCD Cutter outputs MPEG files from VCDs

Get a hold of these cool applications and turn your PC into a complete entertainment studio. You needn't look too far; most of these are on the Mindware CD accompanying this issue. 

VEER KOTHARI

1/2 page H. AD

Bring out the Popcorn!

Let your senses reel. Set up surround sound on your PC for under Rs 10,000 for that immersive home theatre experience

IMAGING: Swaroop Biswas PHOTOGRAPH: Mexy Xavier

The screen fills with the image of the cars lined up at the start line. A heavy silence hangs in the air, only to be shattered suddenly by a shrill whistle and the screech of tires as the cars zip down the street, going from zero to 100 kmph in less than 5 seconds. Your hand freezes on its way to the popcorn bag and the hair rises at the back of your neck as the room reverberates with the sound coming at you from different directions.

No, you are not sitting in a movie theatre with Dolby Digital sound. You are lounging in a chair in your room, with your feet propped up on the desk, watching *The Fast and the Furious*...on your PC! Surprised? Don't be. It's easy to set up a home theatre system on your PC. The most critical component of a home theatre system is surround sound and you can set that up for less than Rs 10,000.

Even if you are not a movie buff, a killer sound system on your PC could give you that extra edge in games by allowing you to hear an enemy sneaking up behind you or simply rendering crystal clear MP3 playback with all the finer nuances audible.

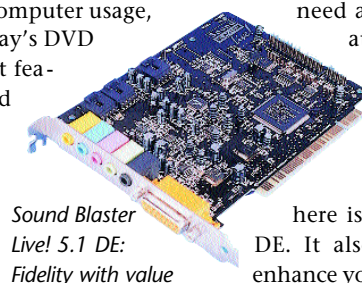
What do you need?

Most PCs only come with stereo support in their audio system and though this is sufficient for general computer usage, the entire effect of today's DVD movies and games that feature surround sound audio tracks would be lost in a conventional stereo setup. Therefore, you would need to add some form of surround sound

equipment to your PC. Each of these components plays a very specific role in bringing you an overall surround sound experience.

Multi-channel soundcard: The majority of soundcards today can handle only two channels of sound (stereo). However, to experience surround sound, the audio should come at you from all directions, not just in front of you. Therefore, at its most basic level you would need a soundcard that can output at least four channels of audio—two front channels (left and right) and two rear channels (left and right).

The soundcard of choice here is the Sound Blaster Live! 5.1 DE. It also features EAX which will enhance your gaming experience as well. With its proven audio performance, this



Sound Blaster Live! 5.1 DE: Fidelity with value

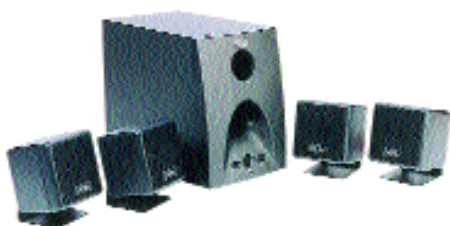
Dolby Digital-capable soundcard is quite affordable and is ideal for movies that include surround sound.

Price: Rs 2,610

Multi-channel speaker system: The next thing you need is a multi-channel speaker system that can render surround sound. The more powerful your speaker system, the more profound will be your audio experience. Multi-channel speakers can be as costly as you want them to be. However, a good place to start is with a simple four-channel satellite-subwoofer system. These speakers are priced very affordably nowadays and have adequate power for delivering a good movie-watching experience in an average-sized 15x20 feet room.

We chose the Artis S880 for its power and great overall performance at a good price. With very good results in the movie playback tests, the surround positioning and definition was great with this speaker system. It also sports good frequency response, making it very suited to music playback as well.

Price: Rs 4,000



Artis S880: Experience immersive surround sound

DVD-ROM drive: This is the component that will allow you to play back high-quality movies that contain surround sound information such as Dolby Digital, Dolby Surround and DTS. Besides, the visual quality of DVDs is far sharper because of the native resolution support of 720x480 compared to the significantly lower resolution of 320x240 supported by VCDs.

Sporting a cool slot-loading disk interface, the BenQ 1648A is a 16x DVD drive with a 48x CD read speed. It boasts of very impressive performance—with an average



BenQ 1648A: Great for movies

access speed of 85 ms and a data transfer speed of over 21 MBps when reading DVDs, this drive will get you through the most demanding applications. It has support for a wide array of DVD standards, ensuring that you won't have a problem reading even DVD-R disks.

Price: Rs 3,300

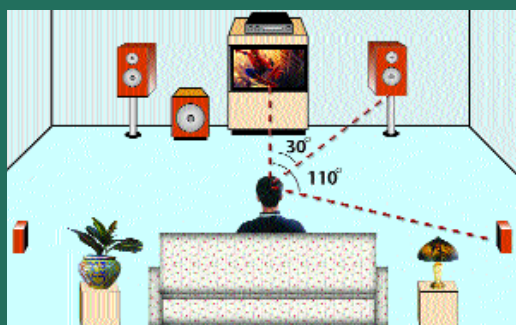
19-inch monitor (optional): If your budget allows it, consider getting a large-screen monitor. This would make your home theatre experience complete.

The Samsung 995DF flat-screen 19-inch monitor is capable of a flicker-free resolution of up to 1280x1024 at 80 Hz.

1 col Strip

Optimum Speaker Placement for a Conventional Home Theatre System

To get the best out of your home theatre system, place the left and right speakers along the width of your room. From where you are going to be sitting, the front speakers should be approximately 60 degrees apart from each other with the listener at



the reference central position. The rear speakers should form a 110 degree angle from this reference position. For optimum effect, the four speakers should be kept at or slightly above ear level. You can place the subwoofer anywhere. If you find that the bass in your system is a little low, place the subwoofer facing a wall, preferably in the corner of the room. If the surround sound channels are too faint, 'toe-in' the surround speakers such that they point toward the listener. Conversely, if they are too prominent, place them facing the wall as this helps disperse the sound from the rear channels, resulting in a more enveloping effect.

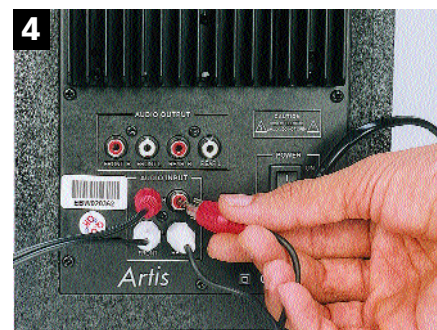
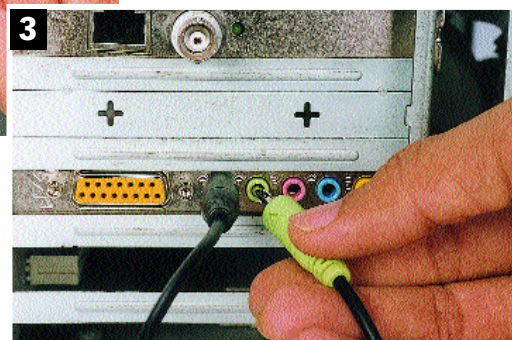
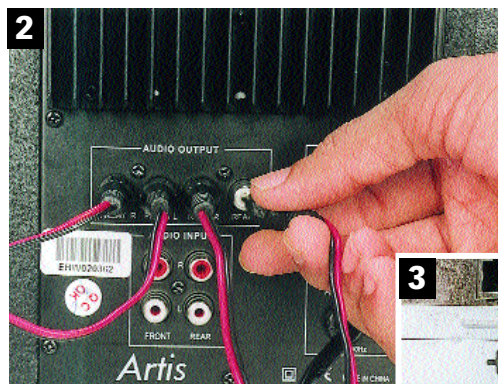
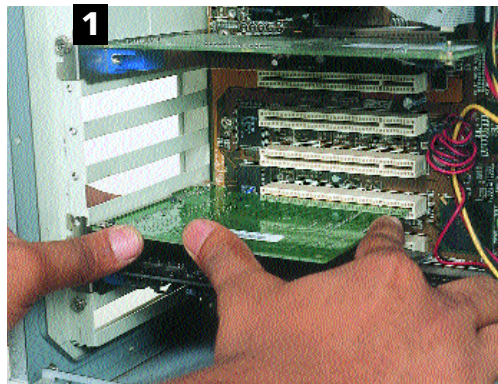
Say Goodbye to Stereo

Until not too long ago, surround sound on your computer meant four-point surround. Soundcards that offered two front and two rear stereo outputs were the *de facto* standard for budget home theater computer systems as they were cheap and adequately placed audio around the listener.

Today, thanks to standards such as Dolby Digital and DTS (Digital Theatre System), you have fully compliant six-channel sound-

cards that can decode Dolby Digital audio streams. The best part is that these cards are now available for outrageously low prices, bringing home theatre to your PC. This includes cards like Creative's SoundBlaster Live! 5.1 DE, which is available for just a couple of hundred rupees more than its four-channel counterpart. This new breed of cards features six discrete channels of sound output and the job of decoding the Dolby

Digital audio stream is done onboard instead of by the system's processor. They also feature pass-through functionality where the Dolby Digital audio signal can be passed onto an external decoder as well, if necessary. What's more, sound subsystems on motherboards such as those based on the nForce chipset already exhibit full Dolby Digital compliance. This has effectively raised the bar on the audio subsystems on PCs.



The INVAR coating ensures that you do not get eyestrain while sitting through even three-hour DVDs. And the good news is that it is one of the lower priced monitors in its size category.

Price: Rs 21,000

Getting it all together

Once you have the tools for enabling surround sound on your PC, the next thing is to grab a screwdriver—we need to get under the hood of your computer!

Install and configure the soundcard:

Find a vacant PCI slot on your motherboard and insert the soundcard, taking care to exert even pressure along the entire soundcard. Now start up your computer; Windows will find the new soundcard as it loads up. Keep the soundcard's driver CD handy and insert it into the DVD drive (or CD-ROM drive) when prompted. Your soundcard will get detected and the drivers will be installed by the system.



Tweak to Perfection

Every multi-channel soundcard bundles its own dedicated application that lets you test the various channels and configure it for optimum surround sound playback. Creative soundcards have an application through which you can verify if all your channels are properly functioning. Through this application, you can also set the levels of these channels so that you have balanced audio from each of the speakers in your surround sound system.

To enable true four-channel sound in your system, you will need to set your soundcard's configuration to recognise four channels instead of the default two channels. Right-click on the speaker icon in the system tray and select *Adjust Audio Properties > Advanced Properties for Playback*. From the Speaker Setup drop-down list, select *Quadro-Phonic Speakers*.

Connect and place the speakers:

A four-point surround speaker set will have four satellite speakers and one subwoofer. Therefore, these speakers will have four inputs—two for the front speakers (left and right) and two for the rear (left and right) that will have to be connected to your soundcard. The satellites will be connected to the subwoofer itself. First place the front speakers on either side of your monitor. Then, place the rear speakers behind you.

Connect the 3.5 mm stereo jack from the Front Out of your sound-

1. Insert the soundcard into a vacant PCI slot
2. Connect the satellite speakers to the subwoofer
3. Connect the speakers to your soundcard's front and rear outputs
4. Finally, connect the soundcard to the subwoofer

card to the Front In on the subwoofer, and the Rear Out from your soundcard to the Rear In on the subwoofer. Finally, connect the front speakers to the Front channel output on the subwoofer and the rear speakers to the Rear channel output. The front/back, left/right channels would be clearly indicated on the subwoofer.

Calibrate the speakers: If your speakers are not running at the optimum signal levels, you will either hear distortion due to a high signal level or the volume would be too low with some channels during playback.



Dolby Digital on the go

Besides support for Dolby Digital, PowerDVD also features support for Dolby Headphone, which simulates the effect of surround sound speakers on a conventional pair of headphones. There are additional tweaks in PowerDVD to enhance audio playback depending on your environment (quiet, normal and noisy) and there is also support for the LFE (Low Frequency Effects) channel which gives you room-shaking bass, if your speakers are up to it.

safe volume level and this is your speaker's upper limit. Keep this Windows volume control level fixed. To subsequently change the volume settings, use only the master volume control on your speakers.

Install the DVD drive: If you already have a CD-ROM drive in your system, you would need to replace this with your new DVD drive—a DVD drive can be used to read CDs as well and therefore having a CD-ROM together with a DVD drive is useless. To remove the CD-ROM drive, unplug the IDE cable and power connector from the rear of the drive and then unscrew the drive from the bay.

Otherwise, install the DVD drive into a vacant 5.25-inch drive bay in your system cabinet. Screw in the drive securely. Plug the power cable to the drive and finally connect the IDE cable from the drive to the IDE channel on your motherboard. If you have




PowerDVD: Surround yourself in sound

only one hard disk in your system, you should connect the DVD drive as the secondary master IDE device in your system for better DVD and CD performance.

Install the DVD playback software: You will now have to install a software DVD player that will be used to playback your DVD movies. This will let you hear the surround sound audio in your DVD

movies. We recommend PowerDVD XP 4.0. Access the configuration menu by right-clicking on the PowerDVD screen. In the Audio section, select the Audio Output to Four Channel from the drop-down menu.

Now that you've installed and configured the various components of your surround sound system, all that's left is for you to grab a bowl of popcorn and get ready to enjoy your favourite film on DVD. 

MARCO D'SOUZA

1/2 page V. AD



NET NASTIES

The Internet is the best thing that ever happened to those who like to stay connected. But every Jekyll has a Hyde...

The Internet has changed our lives irreversibly. It has given us new avenues to gather information on everything from politics to religion, sports and gardening. It has brought our family and friends closer together and connected us across all corners of the world. But more importantly, it has kept us talking—with people we know and with those we don't. With the ones we love and the ones we love to hate.

But there is a darker side to the innovation: viruses that bug us every day, asinine ads that put a strain on the already miniscule bandwidth, e-mail and message spamming that clog our mailboxes and Denial of Service attacks that are a corporate headache, to name just a few. We take a look at the top 10 annoyances that drain billions of dollars of hard-earned currency every year. Come meet the Net Nasties.

AHMED SHAIKH

10

MAIL ATTACHMENTS Less is more

E-mail attachments are not only an essential part of daily communication but also a source of fun and amusement. Remember the document with jokes that had you in stitches for hours? Or the spreadsheet-based quiz that passed a cool 20 minutes of an otherwise mundane day? And surely the important presentation to your boss could not have gone as smoothly if you were not able to mail yourself that 200 KB Power-Point slide! The fun ends when the e-mail attachments grow bigger though. Attachments that exceed 1 MB in size are not unheard of. And this is where things take a frustrating turn. If you know that the large attachment in question is important, then you grit your teeth and bear the agony of downloading it. But what if the source of the file is unknown? Is it something essential? Could it be a virus? Perhaps another one of those stupid ads? A prank? You will never know until you download and open the attachment. And heaven help you if you are stuck on a dial-up line!

Most e-mail clients offer options to filter your mail. This feature lets you sort mail on the basis of the size of the incoming mail. You can also reject mail that exceeds a particular size limit. The latter option is the best, albeit a risky means to escape large attachments. If you go for this option, remember to turn off the filter when you are expecting a large and important e-mail. A safer alternative is to set up a Web-based account. The nature of such services means that you need not download an attachment to your computer until you are absolutely certain of its content. Some Web-based services also offer a nifty preview mode that lets you take a peek inside an attachment before you decide to junk it.

9

PORN Sex sells

Even if you do not buy the above truism, you can do little to escape the inevitable: pornographic material is as ubiquitous on the Internet as oxygen is in the offline world. And like air, adult content essentially keeps a lot of people alive by raking in the much-needed money. There is no avoiding porn; it will not go away anytime soon, or anytime at all. If it offends your sensibilities, all you can do is take precautionary steps. Almost any Web-browser lets you turn off images and animations. Use this feature if you are browsing a site that hosts adult images and banner ads. A lot of advertisements touting sex take the form of popup and pop-under ads. These can be eradicated as explained in Net Nasty 4. Newsletters and mailing lists can also be a source of pornographic material. If you do not know whether a particular service is guilty of such practices, create a public e-mail account and use that to ascertain the facts. Remember that these steps will only reduce an encounter with pornographic content and not eliminate it all together.

8

SPYWARE You are being watched

Chances are that one of the programs that you gleefully installed the other day is spyware. A spyware is a program that offers you services such as a funky toolbar for your favourite browser, then promptly and secretly steals your personal details! It has been known to collect information ranging from your browsing habits such as the Web sites you frequently visit and the ads you often click on, to your credit card details. It then sells this vital knowledge to interested parties for a healthy exchange of money. It is a sad state of affairs and things will only get worse. But there is a respite in the guise of software programs that scan your computer system to identify spyware and help you banish them. One such program, perhaps the best of the lot, is called Ad-Aware (www.lavasoftusa.com).

info

According to a conservative estimate, there are a total of 927 spyware programs out there, a majority of them being Peer-to-Peer services such as KaZaA

7

POORLY DESIGNED WEB SITES Aaarrrgh! It's hurting my eyes!

The World Wide Web came of age in the year 1996. Web sites then were crude rudimentary creations with bad colour choices, pathetic navigational solutions and poor programming. People were still learning the ropes and things were expected to get better.

Six years down the line, poorly designed Web sites still form a rather large percentage of the online world. Let it be known that blue text on a black background isn't retina friendly. And do all those images need to be 500 KB? Mr Programmer, will you please read the W3C (the World Wide Web Consortium) recommendations so that your elite Web site displays like it should on my Mozilla browser? Get with it people!

**SpamNet, AntiVir, Pop-Up
Stopper, Ad-Aware**
Find it in Software > Internet
on the Mindware CD





VIRUSES

They're out to get you!

Just like their biological counterparts, computer viruses are malicious, destructive and unwelcome. Anything from that innocuous little file, to the floppy that your best friend lent you could carry one of these miscreants. They infect and destroy everything including the boot sector of your system, your documents, your precious e-mails and operating system essentials. Like their biological cousins, they mutate and propagate, making them difficult to track and kill. And just as thousands of years of progress hasn't rid the world of the common cold virus, computer viruses are also here to stay and will remain a rather large and irritating thorn in our sides. Moreover, as the sands of progress seep into every nook and cranny of our lives, the havoc wreaked by viruses will only increase manifold. A virus is indiscriminating by nature—your cell-phone or the PDA are equally susceptible to it. The omnipresence of computer viruses has made anti-virus solutions an integral part of every computer user's life. Such software is largely preventive in nature, snipping a virus in the bud and monitoring your system for

info

According to the research company Computer Economics, the Code Red virus caused damages worth about \$2.6 billion in the year 2001. The same research group estimated the Love Bug to have caused damages worth a colossal \$10 billion worldwide

possible attacks. So, even though the software takes up precious system resources, ensure that it is always running on your computer and is monitoring it. Anti-virus software track down malevolent viruses using a database that lists all identified viruses and the means to remove them. This list is frequently updated and in order to ensure maximum protection, it is vital that you update the software at least once every month.

And beware of floppies! They are infamous for spreading viruses and their ilk. Before using a floppy, ensure that you have scanned its contents—more so, if you plan to boot from it. Extend the same preventive measure to e-mail attachments and to unknown macros. Whenever you doubt the nature of a file, or your system seems to act unnaturally, run a virus scan.



POPUP ADS

In your face and painful

Ever since the Internet caught the media's attention, the fact that it reaches a large and varied segment of people caught every marketing department's eye and banner ads were born. The logic was simple—if they put ads on a Web page, surely the people would be interested and click on them. This led to bigger and more eye-catching ads and soon there were animated ads that played sound effects and music. This is where things began to go woefully wrong and increasingly irritating. What followed was the popup ad: a devious ploy to get the attention of users who were obviously giving no love to the ad makers. These nasties pop up and out of a Web site, and the ads themselves run the gamut of stupidity.

Two worthy competitors to Microsoft's Internet Explorer (IE) browser have elegant solutions that help put these ads where the sun don't shine. The latest version of both Opera and Mozilla feature ways to prevent ads, but if you prefer to stick with IE and not jump browsers, then Pop-Up Stopper (www.panicware.com) will take care of just such a need.



SPAM

You've got spam!

It is a beautiful morning, one of those days when you feel that you can conquer the world. You take care of your chores, open your mailbox and out flood messages that promise a free trip to Hawaii, a better love-life and other such mails that overwhelm both your senses and your computer system. You have been spammed. What are you going to do about it?

There are certain practices that help reduce the amount of spam you receive—they vary in effectiveness and ease of use. The first thing to do is to create two e-mail IDs: a personal one for friends, family and colleagues, and a second public ID for the rest of the online world. Services that require your e-mail address, such as newsletters or messageboards, should be given the public mail ID.

A second option is the filter offered by most e-mail clients and services. These let you sort your inbound mail according to the address of the mail sender, directing the mail sent by someone on your address book into a separate folder, while another folder holds the mail that has originated from an unknown source.

Finally, there are software solu-

info

According to analyst Jupiter Media Metrix, each e-mail user in the US received an estimated 595 spam e-mails in 2001. The number is expected to rise to 1,671 by the year 2006

tions such as SpamNet (www.cloudmark.com) that protect you against 80 per cent of spam. These work on the strength of blacklists: databases that contain addresses that are known to generate spam mail. These services are largely effective but have been known to slip-up occasionally and block a valid e-mail.

Nevertheless, a combination of all three solutions can be formidable, reducing spam to a number close to, if not quite zero.



LACK OF FREE SERVICES

The first one is free

The past few years have seen a dramatic decrease in the number and the quality of free services being offered. Big names like Yahoo! are now charging money for solutions that were not-so-long-ago free, even as they discontinue other free features in their services. Taking candy from a baby wouldn't hurt so much if the sweet wasn't offered in the first place. The fact is that we have tasted blood and nothing else comes close—the only comfort is the services that are left.

For e-mail services there is always Yahoo!, MSN and Indiatimes to turn to. But if you are looking for something a little more feature-filled, then we have two such services for you—the first one is OutGun.com (www.outgun.com). It offers a cool 10 MB of inbox space along with extras such as a calendar, a file manager, a file-sharing feature and a place for all your favourite bookmarks. The other service is MyRealbox (www.myrealbox.com), which too offers a generous 10 MB of space. It also features effective anti-spam and anti-virus capabilities, an address book and a calendar service. The most attractive feature of MyRealbox is its support for Internet protocols such as SMTP, IMAP, POP, LDAP, HTML, SSL and TLS. You can thus receive e-mail from a variety of clients such as Microsoft Outlook/Outlook Express, Netscape Communicator, Qualcomm Eudora, Novell GroupWise and more.

If you want to create your own Web page and share it with the rest of the world for free, then give Brinkster (www.brinkster.com) a try. It's ad-free, supports ASP and Flash, and offers 30 MB of space for your creation. And it makes file syncing a breeze with its Web-based file manager. Or try Crosswinds.Net (www.crosswinds.net), which offers unlimited space and Web-based e-mail, but at the cost of banner ads.

Yahoo! Briefcase is a service worth mentioning for sharing files online. It offers a sufficient, if not a comfortable 30 MB of Web space and if you use its mail service, you can save mail attachments directly to your Briefcase.



INFRASTRUCTURE IN INDIA

Promises and lies

By now, we should've been receiving moving pictures, streaming music and up-to-the-minute news broadcasts over the

Internet—at least in theory. The multimedia heaven that was promised is still far away. So what happened? Blame it on bandwidth or rather, the lack of it. Still damned to surf over modems that offer a piddly 5 to 6 Kbps of download speed, the majority of us are forced to remain content with text and ads that feature animated monkeys. Then there are the backbreaking charges levied by both, the phone company and the ISP. And it's not as if a dial-up service is reliable either—a little drizzle can herald the death of your phone line at worst or a noisy connection (leading to data loss) at best. The so-called 'broadband' services are here, but the affordable ones offer only 30 to 40 Kbps of speed. The ones that offer a decent 1 to 2 Mbps of speed charge an arm and a leg.

If you plan to subscribe to such a service, ask for a trial to ensure that it delivers a speed that you find satisfying. Make sure that you test it at a location as close to your place as possible. If you cannot get a broadband service, then your best bet is a download utility such as FlashGet (www.flashget.com) or GetRight (www.getright.com). Such a utility will not speed up your browsing but will help you download large files and lessen the pain of a dial-up connection.




PEOPLE

Hell is other people

There will always be those who will take advantage of the anonymity of the online world. They are the ones who will write the most destructive virus, just because they can. They will bring down your corporate Web site, just because they fancy it. As a matter of fact, they are the fountainhead from which springs all the Net Nasties. Sadly, there is no escaping them.

And then there are the mischief makers who hang around your favourite online forum, eager to derail and spoil a heated discussion. Known as 'Trolls', they indulge in anti-social activities that range from spamming a fellow forum-user, to posting offensive messages and images. The social nature of the Internet makes running into these pests a very likely event.

What can you do? Absolutely nothing. What you can take solace in is that these form a minority. After all, the most interesting aspect of the online world is the interaction between you and the rest of humanity. Realise that these Trolls do not own the Net and like a bad headache, they too will go away if we ignore them! 

info



Kevin Mitnick, a 37-year-old US resident faced 25 charges for a series of attacks on systems belonging to software makers, ISPs, and educational institutions such as Netcom, Motorola, Nokia, Fujitsu, Sun Microsystems and the University of Southern California

info

FIRST POST!

All these other guys are

LOSERS!



Bringer of Bad News: If you see this posted on a forum, the topic of discussion is already dead, courtesy your friendly neighbourhood forum Troll

30 Minutes Expert

Connect sans Net

Have you ever wanted to copy a song or a game from a friend, but found it too small to burn on a CD and too large to waste floppies on, so ultimately downloaded it from the Net? Or have you needed to work from home and the only way to synchronise your work with your office PC was via e-mail? Here's a way to share files across PCs without an Internet connection. All you need is a modem connected to a phone line on each PC and they can be connected directly to each other.

You can set up Windows 98 to receive incoming dial-up connections by setting up Dial-Up Server on one



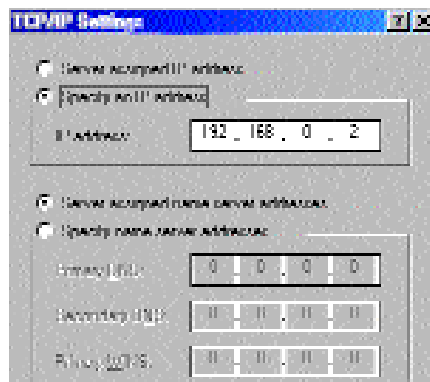
Enable Dial-Up Server to receive incoming modem connections

PC and Dial-Up Networking on the other. Open **Control Panel > Add/Remove Programs > Windows Setup**. Select Communications and click Details. Check the box next to Dial-Up Server and click OK. You will need the Windows 98 installation CD for the files to be copied. Once installed, you can configure the machine for incoming connections from **Start > Programs > Accessories > Communications > Dial-Up Networking**. Here, open Dial-Up Server from the Communications menu and enable Allow Caller Access. You may assign a password by clicking the Change Password button.

Next, you need to configure TCP/IP on both machines for them to be

able to communicate with each other. First, set the IP address on the server (the machine that will receive the calls). Open **Control Panel > Network**, select **TCP/IP > Dial-Up Adapter** and click Properties. Select 'Specify an IP address' and enter the IP address and Subnet mask. You can enter **192.168.0.1** as the IP address and **255.255.255.0** for the subnet. Note that you will need to reset it to 'Obtain an IP address automatically' if you want to make dial-up connections (for example, to your ISP) from this machine. On clicking OK, you will be asked to restart the machine.

To set up the client machine, open **Dial-Up Networking** from **Start > Programs > Accessories > Communications**. Create a new connection with default settings, entering the phone number of the line connected to the server. Once the connection is created, right-click it and click Properties. Under the Server Types tab, disable 'Log on to network', click TCP/IP Settings and again select 'Specify an IP address'. Enter an IP address for this machine (e.g. **192.168.0.2**) and click OK. In this case the IP address has been specified only for this connection, so other dial-up



Configure TCP/IP settings on the Client

connections will work just fine without having to change any settings.

To be able to share folders over a dial-up connection, you will need to have 'File and printer sharing' enabled.

RemotelyAnywhere 4.51.298

Find it in Software > Home
on the Mindware CD



Remote Control Software

These software let you connect to another machine over dial-up, LAN or similar connections and use it as if it were your PC. Some of the most popular software are Virtual Network Computing (www.uk.research.att.com/vnc), pcAnywhere (www.symantec.com), Control IT (www.ca.com), Carbon Copy (www.altiris.com) and Remote Administrator (www.radmin.com).

This can be done from **Control Panel > Network**. Simply double-click the connection on the client and it will connect with the server. The machine should be visible from Network Neighborhood, but if you can't see it, you can browse the shared resource by using its IP address. For example, you can access a shared folder called 'share' on the server by typing **\\192.168.0.1\share** in the Windows Explorer address bar. Another way to access the machine is from **Start > Find > Computer**—again, you have to enter the IP address here.

You can even set up remote desktop management software on the server and have complete control over it from the client. We will use a software called RemotelyAnywhere (www.remotelyanywhere.com)—this is completely TCP/IP based and works off a Web browser. When installing the software, you can configure which ports it should use for HTTP (for remote control), Telnet and SSH. You can leave all settings to default (HTTP is on port 2000). After connecting from the client machine, open up a Web browser and go to **http://192.168.0.1:2000/**. This will open up the RemotelyAnywhere screen from where you can manage all files, system settings and even control the remote desktop as if it were the local machine.

VEER KOTHARI



Uninstalling Linux, converting videotapes to VCDs, sharing Internet connections, synchronising e-mail across PCs—find all your answers here

Crashing Visual Basic

Q. I seem to be having a very queer problem. Whenever I work with Visual Basic 6.0, I get the following error message: "This program has performed an illegal operation and will be shut down. If the problem persists, contact the program vendor. VB6 caused an invalid page fault in module VB6.EXE at 0167:004581f1."

I have thoroughly scanned my system for viruses and also uninstalled and reinstalled the application a number of times. Please tell me the cause of this error and the solution.

Vaibhav Bhawsar
Bhopal

A Since you haven't mentioned when the program crashes, it will be difficult to point out the exact cause of the error. Visual Basic has many documented bugs; monitor the program when you are working with it and you will notice a pattern of events every time it crashes—say, while using a particular ActiveX control, an API (Application Programming Interface), loading certain kinds of images, etc. You can trace the cause of the error from here and fix the required component. The best solution is to install the latest patches and Service Pack. You can get Service Pack 3 at <http://www.microsoft.com/msdownload/vstudio/full.asp>.

Relentless Me

Q. Whenever I try to use Windows Me Help, I get the error message, 'The initialization of the Help Center failed'. I tried reinstalling Windows Me, but to no avail. Whenever I run MS Access XP and some other programs, I get an error message that reads, 'ActiveX component can't create object'. Please advise.

Neil
Via e-mail

A This can happen if the Help and Support Center in Windows Me is not properly configured because the Windows Management Instrumentation (WMI) Setup failed. Open the command

Repairing Windows XP

Q. I have Windows 98 and Windows XP installed on different partitions. I was playing a game on XP when suddenly the lights went out. Since then, the Start Menu and taskbar just don't appear. Now I have to open Task Manager every time I want to start an application. Please suggest a way to get the taskbar back without re-installing Windows.

Harsh
Via e-mail

A This can happen if the Windows settings for one or more user accounts are corrupted. The simplest way to solve this would be to repair Windows XP. Run the installation



ILLUSTRATIONS: Mahesh Benkar

from the Windows XP installation disc and choose 'Repair the existing installation'. The repair option will only replace Windows files, leaving all other programs intact.

You can also get around the problem by creating a new user account. Press [F8] as Windows XP starts booting and select Safe Mode on the Windows Advanced Options menu. When prompted to select which operating system to start, select Microsoft Windows XP. Choose Administrator as the user and enter the administrator password. Click Start, right-click My Computer and click Manage. You can create a new user under Local Users and Groups. Restart Windows normally and log on as the new user. This should solve the problem, but you may need to reinstall some of the programs and copy data such as documents from the My Documents folder or e-mail from the old user account.

prompt from **Start > Programs > Accessories > MS-DOS Prompt**. Type the following commands (assuming C:\Windows is where Windows is installed):

```
cd c:\windows\system
copy regsvr32.exe wbem
cd wbem
for %%f in (*.dll) do regsvr32 /s %%f
winmgmt /regserver
exit
```

This will register the WMI components and you should not get the errors henceforth. The Access error could happen due to a number of reasons but is most probably due to a corrupted or inaccessible file. Try repairing the Office XP installation or entirely removing and reinstalling it from **Control Panel > Add/Remove Programs**.

CD-ROM not detected

Q. My system has a 466 MHz Celeron processor with 256 MB RAM. I have a 17 GB hard disk as primary master, a CD-Writer as secondary master and a 48x CD-ROM drive as secondary slave. Once in a while, when I use the Auto Detect HDD option from the BIOS, all the drives are detected and work fine, but later the CD-ROM drive is not available through Windows. Two or three boots later the BIOS fails to detect it, giving an error: 'ATAPI Error, secondary slave incompatible. Press F1 to continue'. The Auto Detect function in the BIOS does not work either. When I asked a technician to look at it, he said that there was a problem with the lens. I got the lens changed, but the problem persists.

Hrishikesh Thite

Via e-mail

A You haven't mentioned what version of Windows you are running. However, there are a few things you can try, assuming that all the jumpers are set according to the instructions on the drives. First, try switching the IDE channels. Set the CD-ROM drive to primary slave, or set the CD-Writer to secondary slave and the CD-ROM drive to secondary master. If this does not help, revert to the current configuration and set the secondary slave as 'None' in the BIOS. Reboot to Windows and see if it detects the drive.

Access denied

Q. I use WinZip and have password-protected certain archives but have forgotten the password to a very important

file. Can it be retrieved by any means?

Deep Choudhury

Via e-mail

A There are some tools to recover passwords from archives, but none of these are free. Some use dictionary-based password recovery techniques (trying various possibilities from a predefined list), others use brute force to crack the password (trying every possible combination



Use Zip Key to recover passwords from zipped archives

of characters). You can try out Zip Key from www.lostpassword.com.

Printer setup

Q. I had an assembled PC running Windows Me and a dot matrix printer TVS-E Novo 130. With this, I was able to change the page setup as I wanted. Now I have bought a Compaq Presario 700 laptop, with Windows XP as the OS. I installed Office XP and the same printer on this laptop. When working with Excel, I am not able to change the page setup to 9x6 inches. It provides me with some odd paper sizes, which are of no use to me. Please help me.

Kamal

Kolkatta

A The available paper sizes are just a function of the printer driver. You can download the latest drivers for the printer from <http://www.tvs-e.com/products/novo130.html>, or try using different dot matrix drivers for the printer from the Windows XP list of printers (**Control Panel > Printers > Add Printer**).

VHS to VCD

Q. I have a Pentium 4 1.6 GHz processor with a 32 MB Riva TNT2 M64 graphics card, a 40 GB hard disk and a Sony 24x10x40x CD-Writer. Can I use my PC for VHS to VCD conversion with a VCR as input? What will I need to do this? What will be the procedure?

Dhande Yogesh

Via e-mail

A Your system is adequate for processing video—all you need is a video capture card. There are several available, such as the ones from PixelView, Adcom and Tekram, all under Rs 3,500. Just install the card, connect it to your VCR and record the video using the bundled software. For converting the movie to VCD, you will have to encode it in MPEG-1 format. Any standard CD burning software will be able to burn this to a VCD.

Internet sharing

Q. We use seven Celeron 700 MHz machines with 64 MB RAM, networked with Cat5 cables and the server has 256 MB RAM with Windows 98 SE. A 56 Kbps external modem from this shares the dial-up Internet connection on the network using ICS (Internet Connection Sharing). The clients do not open Web pages fast enough. Please suggest how I can improve the Internet speed.

Robert Larinawma

Aizawl

A You can't really expect very high speeds on your connection since theoretically, you are sharing a speed of just over 5 Kbps across eight machines. Thus, even if you are indeed getting the full bandwidth from the connection, each machine is getting only over 600 bytes per second, which is very slow. You may want to use a better proxy server such as WinGate (www.wingate.com), by which you can monitor the total bandwidth to know



WinGate can log bandwidth usage when sharing an Internet connection

exactly how much bandwidth you are receiving at different times of the day. If you are getting the full 56 Kbps, there's not much you can do to improve the speed, except add a

Failing hard disk

Q. Recently, my Windows did not boot and showed a 'VFAT Initialization Error'. Scandisk fixed some errors and I formatted the hard disk and reinstalled

FAT32 on Linux

Q. I have a Pentium III system with 128 MB SDRAM and a 20 GB Samsung hard disk. I had three operating systems: Mandrake Linux 7.1, Windows XP and Windows 98. Earlier I was able to access all Windows partitions from Linux, but I recently switched from Mandrake to RedHat Linux 7.2. Now I am not able to access the FAT32 partitions. Is there any way to access these in RedHat?

Ezhil

Via e-mail

A Mounting a FAT32 filesystem requires FAT32 support either in the kernel or as a module. First, create a mount point using the following command:

```
mkdir /mnt/windows
```

You can use the following command to mount the FAT32 partition on Linux:

```
mount /dev/hda1 /mnt/windows
```

If this does not work, use this mount command instead:

```
mount -t vfat /dev/hda1 /mnt/windows
```



You will now be able to access the FAT32 partition from `/mnt/windows/`. Note that here it is assumed that `hda1` is the FAT32 partition. Replace this with the appropriate device ID on your system. Instead of `vfat` as the module, you can also use `msdos`, though in this case you will lose out on FAT32 features such as long filenames.

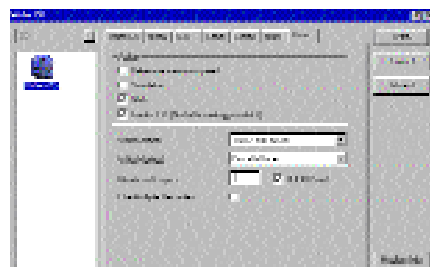
To mount the partition every time the system boots, add its entry to the `/etc/fstab` file in any text editor.

burnt to 100 per cent and the software is writing the Lead Out, the CD-Writer stops working, but sometimes it burns successfully. I write the CDs at 8x. Is this happening due to a software error or is there a fault with the hardware? Please help.

Deep Sanjay

Via e-mail

A There could be several reasons for the burn to fail. The media itself could be a problem, especially since some CDs burn well and others don't. You can try changing the CD-Rs to see if that helps. It may also help to reboot the machine once and turn off all other applications before burning a CD. Also, ensure that



Finalise the CD and enable Burn-Proof when writing VCDs with Nero

the burn settings are all correct. Do not keep the compilation open when burning VCDs. Also, you may want to turn off Simulation and enable the Burn-Proof feature. Also try reducing the burning speed.

Inconsistent disks

Q. I have a PC with an AMD Duron 800 MHz processor, 128 MB RAM, one 8.4 GB and one 1.2 GB hard disk. The first disk has two partitions—the first partition has Windows 98 and the second partition has Linux. Recently, I upgraded from Windows 98 to Windows 2000 Professional. The installation went smoothly, but whenever I start the machine, I get the following error: 'Checking File System on C:, Type of File System is FAT32. One of your disks needs to be checked for consistency. You may cancel the disk check, but it is strongly recommended that you continue'. If I allow the disk checking to continue, no problem is found. This happens every time though I shut down the system properly.

Vaibhav Sharma

Via e-mail

Windows. It boots properly now, but the machine hangs often and Scandisk regularly reports that drive C is showing incorrect space. What is the actual problem and how can I fix it?

Koushik

Via e-mail

A The VFAT error occurs if the `ifshlp.sys` file is missing or corrupted. You can simply replace this file for Windows to work. However, since you've already fixed that, the new problem looks like it's related to the hard disk. Run a thorough Scandisk and repair any problems with the hard disk, first from DOS, then from Windows. The Scandisk that runs automatically does not do a thorough check. Once all the disk errors are fixed, so should the problem.

No sound

Q. I have recently installed a TV-Tuner card with FM support, but when I connect the sound cable from the Audio Out on the TV-Tuner card to the Audio In on the motherboard, I can't hear any sound. If I directly connect my speakers to the Audio Out of the TV-Tuner card,

I can hear the sound. What could be the problem?

Pradip Makwana

Via e-mail

A The volume for the Line In for the soundcard is probably set very low or may even be muted. Double-click the Volume icon on the taskbar to bring up the Volume Controls. Click Properties and enable all devices to be displayed on the Volume Control. Look for options such as Auxiliary, Line In or TV-



Enable Volume Control for the Line In channel on the soundcard

Tuner (depending on the soundcard installed) and check the volume. Make sure it is not set to mute and raise the volume until you can hear the sound.

Burning issues

Q. I have a Pentium III 600 MHz system running Windows 98. I use Nero to burn VCDs, but these days I am facing a peculiar problem. When the CD is

Uninstalling Linux

Q A friend of mine installed Mandrake Linux 8.2 on his PC, but later tried to use an HP recovery CD to return to Windows. The Linux installation was on the only partition on the disk and the recovery CD couldn't work, as it could no longer access this. I tried deleting the partitions but was unsuccessful. Kindly help me return to Windows.

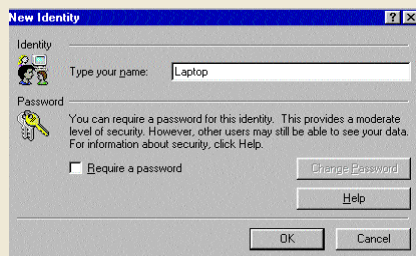
Rahul Srinivasan

Via e-mail

A You can boot to Linux, login as root and use the Fdisk tool to delete the Linux partitions. Alternatively, you can boot using a Windows Startup disk and use the DOS-based Fdisk. If you are using the Linux Fdisk utility, you can type **m** at the prompt to get help. Type **p** to display partition information and Type **d** to delete partitions, upon which you will be prompted for the partition number you want to delete. Delete all Linux partitions one at a time. Type **w** to commit the changes. Enter **q** to quit Fdisk. Reboot the machine using a DOS bootable disk and use the DOS Fdisk tool to create FAT32 partitions. You will have to restart after creating the partitions and format them. From here, you can use the HP Recovery CD or a Windows installation disc to install Windows.

Two PCs, one mailbox

Q I use a desktop and a laptop for accessing e-mail and need to synchro-



Adding a new identity in Outlook Express

nise them often. I would like to have all the e-mail in one place—move the mail from my laptop to the desktop, while maintaining the ones already there. How is this possible? I use Outlook Express 5 and Windows 98 SE on both machines.

Michael Jeyabalan

Via e-mail

A There is no direct way to do this in Outlook Express, but there are a few workarounds. The easiest thing to do would be to create a new identity (**File > Identities > Add New Identity**). Outlook Express stores each identity's mailbox files in separate folders (in C:\Windows\Application Data\Identities), so to synchronise the laptop with the desktop, you would have to simply replace these files on the desktop PC. However, switching identities can get irritating over time. Another thing you can do is create separate folders for e-mail from the laptop and, as above, replace the files for these folders from the laptop. Again, if you do not wish

to store the mail this way, you can use these folders as temporary holders—you can select all the e-mail in a folder and simply drag them to the folder where they are actually meant to be stored.

Dual booting Windows

Q I have an 8 GB hard disk with one 2 GB FAT partition and rest as an NTFS partition. I had Windows NT 4.0 Workstation installed on drive C. Later I installed Windows 95, now I can't boot to Windows NT. I no longer get the option to start Windows NT as I used to earlier. Is there any chance of recovering it?

Nirav Patel

Via e-mail

A The Windows NT Flex Boot Loader has been overwritten by the Windows 95 installation, but don't worry, it's possible to restore this and have a dual-boot option. Boot the computer using the Windows NT Setup boot disk. You will soon be prompted for Setup Disk 2. On the setup options, press [R] to repair the installation. You will now get four repair options. Select the option to Inspect Boot Sector and continue. The Windows NT Flex Boot Loader will be restored on completing the repair. You may need to edit the c:\boot.ini file to include information about the Windows 95 installation.

A Windows 2000 has much stricter consistency checks on all hardware devices than earlier versions of Windows. It probably does not recognise the Linux file system and thus shows the inconsistency error. However, since it also cannot read that partition at all, it fortunately does not check it either—if it did, it would try to fix it and your Linux installation would be corrupted.

SCSI interrupt error

Q I have a Dell PC with a Pentium 4 1.8 GHz processor, 512 MB RAM, a GeForce3 TI200 graphics card and a SoundBlaster Live! soundcard. The OS is Windows XP. I would like to know how to view the output from the PC on a TV

without using a TV Out card. Also, I have a 16x CD-RW drive using a SCSI card. However, I get an I/O interrupt error during startup. Can this be solved? Is there anyway of taking a backup of the address book in Outlook Express?

Manish Golder

Via e-mail

A There are external TV Out boxes using which you can connect the monitor connector from the graphics card to the TV. The SCSI card could be conflicting with one of the PCI slots for a free interrupt. It may be possible to get rid of the interrupt error by changing the BIOS settings. As the machine boots,

press the [Delete] key to enter the BIOS setup. Under PnP/PCI configuration, set the configuration settings to Auto and enable PnP OS Installed. All devices should now be assigned free interrupts automatically and you should stop receiving the error. To backup the Outlook Express address book, look for *.wab files on your hard disk and copy them.



Send your computing problems to sos@jasubhai.com or write to Digit, D-222/2, Om Sagar, MIDC, Nerul-400 706, and we may answer it here!

tips & tricks

Smart@work

Cut those every-day tasks in half with these simple and efficient solutions to some of the most common problems we all face at work



ILLUSTRATIONS: Mahesh Benkar

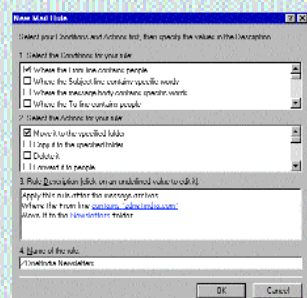


Tips and Tricks on adding that something special to your **digital video** creations

I spend most of my morning sorting through heaps of mail and newsletters.

Sorting through mountains of mail is a morning ritual for most of us, but the process can be streamlined. Both, Outlook and Outlook Express, and most other e-mail clients, host powerful automatic filtering features. Called Mail Rules or Mail Filters, these tools determine how to handle incoming mail based on a few defined parameters. They can sort your mail depending upon the sender—the newsletters from ZDNetIndia.com will be stored in a particular folder, while all the spam mail from spammers.com will be automatically deleted.

To set up rules, click **Tools** > **Message Rules** > **Mail**. Click **New** to create a new rule. Select the criteria (say, 'Where the From line contains people') and click on



Create rules for your mail

the criteria in the Rule description box. Here you can add the specific values for the criteria (e.g. zdnetindia.com). Similarly, select the action for the rule (Move it to the specified

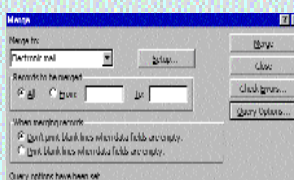
folder), click the action item in the Rule Description box and enter its value. Enter a name for the rule and you're done. You can even set up multiple criteria and multiple actions for rules.

One really cool utility lets you separate the e-mail you receive from a particular account (say, company account) from the rest. To do this, set up the rule as 'Where the From line contains people' and enter the company's domain name (e.g. jasubhai.com). Click **Options** and choose 'Message does not contain the people below'. Set the action to move the message to a specified folder and choose a folder to store the messages. Now your corporate e-mail will come into your Inbox and other messages will wait in the other folder till you find the time to sort them.

My boss asked me to send this letter to all our customers in Delhi. He asked me to e-mail those who have e-mail access.

This task is very simple if you have the list of customers in a database. Microsoft Excel is the easiest to work with, so request your database operator to give you the list in Excel. Type your letter in Word, leaving blanks where the customer's information (name, for example) should appear. In Word, open **Tools** > **Mail Merge**, and click **Create** > **Form Letters**. Click **Active Window** and then **Get Data** > **Open Data Source**. Select the Excel

file and then edit the document. The Mail Merge toolbar will automatically appear. Click **Insert Merge Field** to insert the customer's name. You can filter out the residents in Delhi in the Excel sheet itself, or when extracting the list from the original database or even from the Mail Merge function itself. Once you've added all the fields, click the Mail Merge icon. Select **Mail Merge** to **Printer** and click



Filter data before merging it with the document

Query Options. Here, set the criteria to select only the people who don't have e-mail addresses (select the E-mail column under **Field** and set the Comparison to 'is blank') and set the city to Delhi if you want. Click **Merge** to print all the letters. Similarly, select **Electronic Mail** in the 'Merge to' options and set the query to pick up only the records that have an e-mail address. These can be sent automatically via e-mail. Again, open **Tools** > **Mail Merge** in Word. This time select **Create** > **Envelopes** (or Mailing Labels). Following the same process as above, you can print envelopes (or labels to stick on the envelopes) for those who will be receiving the printed letter.

My temp who enters all these forms into the database is quite slow. He's probably never used Access.

Give the data entry operator a form on the screen that looks similar to the form he's entering data from. In Access, open the database



Make Access user-friendly with forms

and click the **Forms** tab. Click **New** and select **AutoForm: Columnar**. Access will automatically create a data entry form that is linked to the table. Once the form is created, you can rearrange the text fields to look exactly like the paper form—just drag the elements to the correct positions!

Every time I go out, they just start surfing the Internet. The other day he was looking at... ugh!

The Internet can be an excellent resource for research and information; however, it can also be a distraction, bringing down productivity. This can be controlled in Internet Explorer without having to install any additional programs. Open **Control Panel** > **Internet Options**. Under the **Content** tab, click **Enable** and enter a password—you will be asked for this password every time you modify the settings. Click **Settings** to set up what sites

Ad will come

are allowed. Under Ratings, you will notice that by default the Content Advisor does not allow any explicit language, nudity, sex and violence—sites that contain such content will simply not open. You can configure these by adjusting the slider for each item. Under the Approved Sites tab, you can enter a list of sites that are always or never allowed. Under the General tab, if you disable ‘Users can see sites that have no rating’, they will not be able to open any site that is not in the allowed list. If you enable ‘Supervisor can type a password to allow users to view restricted content’, every time a page that is not allowed is loaded, the browser will ask for a password. Entering the correct password will override the restrictions and the page will load.

The last time I sent a mailer, everyone complained about the huge attachment.

Attachments are usually quite irritating, especially if they are very large. Not only does such e-mail take long to download, it also holds up all the other mail queued up behind it. Most mailboxes have only 2 to 5 MB of space; hence it’s downright thoughtless to send large files that will bounce all the other mail. Compressing documents and images using a standard compression like Zip is an easy solution. However, multimedia files cannot be compressed much. Compressing the files before



sending them involves an additional step, but most compression tools such as WinZip add shell extensions (functions that are accessible by right-clicking a file) that make it unobtrusive.

We’ve got so many different kinds of customers. How can I find all those situated in Delhi?

If you have the list of clients in Excel or can convert it to Excel, simply click **Data > Filter > AutoFilter**. All column headings will be converted to drop down lists from where you can filter the records to any level. The drop down will



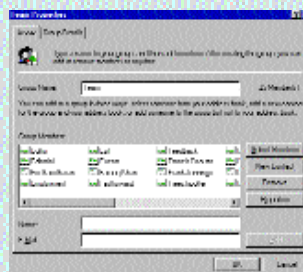
Powerful filters in Excel

automatically pick up all unique values in the column, so click any value to see rows that only have that value (e.g. Delhi). The filtering is additive: selecting values in the various drop down lists will apply all filters simulta-

neously. Click Custom and set an advanced rule for filtering. This is very powerful with both, numbers and text. You can return to the original view by choosing All in the drop down list box. If you are using Access, you can simply right-click a cell and select Filter By Selection to filter the column by that value, or enter a value for the Filter For box for a custom filter.

I regularly need to send e-mail to everyone in the company.

If you send e-mail regularly to the same people, create a group for them in the address book. If these names are already present in your address book, creating a group



Create a group to send e-mail to multiple recipients

is much simpler. Open up the address book and click **New > New Group** from the toolbar. Enter a name for the group and click Select Members. Here, you can select all the people you want included in the group. When you want to e-mail these people, enter the name of the group instead of the individual e-mail addresses and the mail will be sent to every member on the list.

I just switched from Outlook Express to Outlook. I have to type the address every time I send a mail. In Outlook Express, it used to come automatically.

This is the most irritating part for Outlook Express users who migrate to Outlook. All you have to do is type in a part of the e-mail address and press [Ctrl]+[K]. If Outlook finds the address, it will automatically complete it. If it finds more than one possibility, it will show you the options—double-click on the right one to fill it in.

I get a lot of e-mail and spam, but that’s the least of my problems; these days there are so many viruses going around!

Installing a good anti-virus software will take care of the virus-related problems, but it needs to be updated regularly, since they become outdated quite fast. Understanding the mechanisms of certain kinds of viruses and cultivating practices to avoid them altogether is much more effective. Most new viruses

and worms spread via e-mail by enticing users to open attachments. If you get e-mail with attachments, open it only if you were expecting it. Worms send themselves to addresses from an address book, so it's not safe to open attachments even if it's from someone you know. Avoid executables altogether—it's better to miss a joke than become one. Watch out for attachments that are named as filename.jpg.exe—these are executables too. Various services on the Internet alert you about new viruses and their nature as soon as they are discovered. Sign up with a good one to keep yourself updated so that you know well in advance how to avoid them.

How do I copy text and images from a PDF document?

Adobe Acrobat Reader has three tools: one for selecting text, one for selecting columns and a third for selecting graphics. Use the Text Selection tool from the toolbar to select running text, as you would in a Word document. The Column Selection tool (drop down the options under the Text Selection tool to access this) is great for picking up blocks of text, say from a brochure. Draw a rectangle around the area you want to pick out text from and only the text within that box will be selected. The Graphic Selection tool is tricky—images are not separate objects in a PDF document. Draw a rectangle



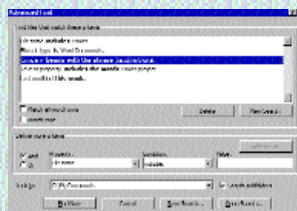
Selecting blocks of text from PDFs

around the image you want to copy. Even if that area contains text, it will be copied as a graphic element, which you can paste into any image-editing application.

There are just so many documents! I can't find the contract agreement for the Power project!

If you have a lot of unorganised documents, finding the right one can be quite time-consuming. It's always faster to have the computer look for them rather than you taking up the task. All the applications in Microsoft Office—Word, Excel, PowerPoint and Access—have extremely powerful search features that locate the required file. On the File Open dialog, you can have the program look for files that contain certain text by entering the text in the Text or Property area. You can also filter down the selection to a particular date from the Last Modified drop down list. Click Advanced and you can specify an infinite number of criteria to locate documents. The Advanced Find dialog automatically picks up criteria specified on the File Open dialog (text, document type and modified date). You can add more by selecting a property (File Name, Compa-

ny, Author, etc), selecting a comparison condition (includes or begins with), entering a value for comparison and clicking Add to List. Once you've specified all the criteria, click Find Now. The File Open dialog box will display only documents that match. If you enabled 'Search subfolders', Word will display the entire tree structure down to the documents!



Locating documents is easy in MS Office

From the Advanced Find dialog, you can also save searches for later reuse. Thus, even if your documents are organised well, but across a few folders, you can save certain commonly-used searches and simply use those to open up documents of a particular kind in a single click. The New Search button resets the search criteria.

He expects me to know the entire Internet by heart? Now where am I going to find Web sites on corporate successes?

The World Wide Web is a huge resource of information, but research is akin to filling a glass from a gushing fire hydrant. However, search engines are getting better by the day and within minutes you can open up a whole

bunch of Web sites that are relevant to your topic. Search engines have grown smarter and know how to avoid cheap tactics of Web developers to get their pages to show up on search results. Also, some of them actually have hand-picked selections of Web sites. Most already use referral ratings to prioritise search results—if the site is linked from a reputed site, it gets a higher priority. Thus, you can simply enter the words you are looking for and find relevant results within the first 20 matches.

Google (www.google.com) is known to give the most accurate search results for the simplest of queries. However, almost all search engines have a lot of mechanisms for advanced searching, which are usually unknown to most. Again, the way to use advanced searches differs from engine to engine. For example, wrapping text in double-quotes indicates a phrase search. And, Or, – and + usually indicate boolean searches, depending on the search engine. Sites like



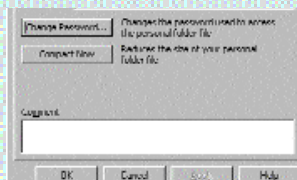
Cool search options at HotBot

Altavista (www.altavista.com) also recognise keywords such as Near for boolean searches—it will return results for pages that contain words close to each other, for example, in the same paragraph. Most search engines can also search for matches only in the page titles. Advanced searching instructions are usually located in some corner of the search page—look for such a link on your search engine, go through the instructions, and you will be able to locate sites more powerfully. Many advanced options are controlled by the way you type the search criteria, but almost all of them have a user-friendly form for at least some of the frequently-used features. HotBot (www.hotbot.com) has some very good advanced search features missing from most other search engines, such as return only top-level pages, pages must include certain kinds of files, etc.

I don't want others to read my e-mail while I'm away from office.

If you use Outlook or Outlook Express, you can hide your e-mail behind a password. For Outlook Express, click **File > Identities > Manage Identities**. You will see the current identities setup on the computer with Main Identity as the default one. Click Properties for the one you want to protect, enable 'Require a password' and enter the password you want to use. Every time you start Outlook Express, you will be

asked for the password. Be careful though—if you simply close the program, the next time you will not be asked for the password. Click **File > Exit and Log Off Identity** when you want to quit it.



Protect your e-mail in Outlook

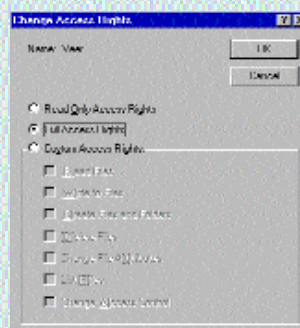
For Outlook, you can actually protect the data file itself. Thus, even if it is copied to another machine, the password will still be required to access the e-mail. Click **File > Data File Management**. Click Settings and then Change Password. Enter the password and disable 'Save this password in your password list'. Now, every time you open Outlook, you will be asked for this password, without which Outlook will not load the message stored.

Sharing my files is much more convenient than sending an e-mail every time I want my boss to check something. But is it possible to prevent others from accessing them?

Windows 98 is not very secure when it comes to sharing files, but no networked machine is hacker-proof. However, there are some things you can do to prevent people from accessing your files. The simplest of all is to use passwords. When sharing

a folder, you can specify two passwords, one that will allow a person to only read files, the other that will also allow him or her to modify them. Secondly, you can share folders such that they are not visible on the network. When sharing a folder, if the share name ends with a dollar sign, it will not be visible in Network Neighborhood, but a person can access it by typing the full path to it (\\machinename\share\$) in Windows Explorer. Thus, only the people who know that such a share exists can access it.

Another security option in Windows 98 is to create user level shares. For this, your network must be controlled by a Domain Controller, which has the users and groups already defined on it. Right-click on Network Neighborhood, click Properties and switch to the Access Control tab. Select 'User-level access control'. All current shares will be disabled and after rebooting, when you share a folder, you can add a list of users who can access the share and also define what they are authorised to



More control over shared folders



do with the files there (read, write, delete, create files and folders, change file attributes, list files and change access control).

How do I access my e-mail from home as well as from the office?

There are three ways to do this. In your e-mail client, you can set up mail to be kept on the server even after it is downloaded, so that it is still available from other machines. In Outlook Express, click **Tools > Accounts**, select the e-mail account for which you want to enable this function and click Properties. Under the Advanced tab, enable 'Leave a copy of messages on server'. Outlook Express can optionally remove the messages from the server after a specified number of days, or if you delete it from your e-mail store. In Outlook, you can

access the same function from **Tools > Account settings**.

Another option is to use a Web-based service such as mail2web (www.mail2web.com) to access your e-mail. This service requires no registration—you just enter your e-mail address and password, and you can access all your e-mail from wherever you are. It works with all POP3 and IMAP4 servers.

The best option is to use IMAP, if your e-mail server



Use IMAP to access mail from multiple locations

supports it. Most commercial servers support it by default, but the administrator may turn it off. When you use IMAP, all the mail is stored on the server and the e-mail client allows you to work with the e-mail as if it were downloaded locally. This is as good as Web-based e-mail, with the convenience and features of an e-mail client. To set up IMAP in Outlook Express, click **Tools > Accounts > Add > Mail** and enter your name and e-mail address. When asked for the e-mail server names, choose IMAP from the drop down list. Once the account is created, Outlook Express will download the list of folders from the server. You

can set up IMAP any time on any machine and have access to the same e-mail. Thus, if an e-mail is marked as read, it will appear as read from all other machines.

I know it's not good to use the same password everywhere. But there are just so many passwords, I forget all of them.

Using the same password for all purposes may seem convenient, but it can be extremely dangerous. However, remembering more than even five different passwords (they are supposed to be cryptic so that they are not easily breakable, right?) can be tedious. And you are not supposed to write them down anywhere because someone might just find it.

The answer lies in a password management utility.



Manage passwords smartly and securely

There are lots of free software available that generate cryptic passwords and you can note down what password you are using where. The list is stored in an encrypted format behind a single password. Thus, you have to remember only one password and if someone gets hold of the list, it will be quite difficult for him or her

to access the passwords. Whisper 32 (www.ivory.org) is one such tool. It stores all your passwords in one password-protected and encrypted file. Data files are encrypted using a robust encryption algorithm. You can set certain passwords to expire at particular intervals. Another tool, PINs (www.mirekw.com/winfreeware/pins.html), is also free and very flexible. It stores passwords for functions under various categories. It can also generate cryptic passwords and has excellent security features.

I want to send this presentation to others. They may not have PowerPoint and I want the fonts, transitions, etc to look the same.

PowerPoint has some great features for sharing presentations. If you want to simply run the presentation over a LAN, you can simply click **Slide Show > Online Broadcast > Begin Broadcast**. However, with this everyone viewing the presentation must have PowerPoint installed. A simple solution to this is to use the PowerPoint Viewer. This is a small installation just for viewing PowerPoint slide shows. You can have your presentation carry the fonts used along with it, if the fonts do not have license restrictions. Click **File > Save As** to save the presentation. In the Save As dialog box, click **Tools > Embed TrueType Fonts**. The best way to distribute presentations is to

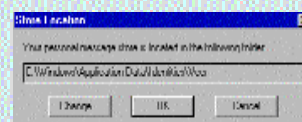


Pack presentations for sending

use the Pack and Go feature. This creates a self-extracting archive of the presentation so that it can be sent by mail and you can optionally include the viewer along with it as well as embed fonts. Click **File > Pack and Go** and simply run through all the screens.

These blue screens are irritating. I wish I could just format the hard disk and install Windows again, but I don't want to lose all my e-mail and my address book.

Outlook Express stores mail in .dbx files. In Windows 9x they are stored in `\Windows\Application Data\Identities`. You can see and change the location of the mail store from Outlook Express itself—click **Tools > Options > Maintenance > Store Folder**. Simply copy the files to a different location to back them up. Outlook stores mail in .pst files. Click **File > Data File Management > Settings**. From here you can see where all its

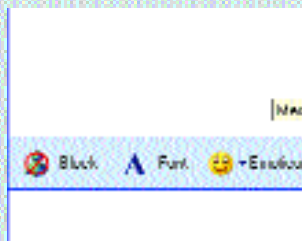


The folder where your mail is stored

contents including mail, contacts, notes and reminders are stored.

These phone calls to regional offices are costing us so much!

Instant Messenger (IM) services such as Yahoo!, MSN, etc provide very good functions for text, voice and file transfers—you only need to be connected to the Internet. Apart from pro-

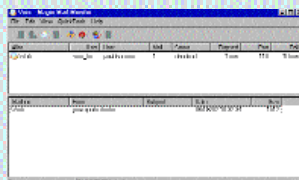


Cost-effective communication with IMs

viding a cost-effective alternative for communication, IMs are also convenient. For example, you can leave messages for a person even while he or she is not at the desk and transfer files directly, thus avoiding large e-mail attachments.

How can I preview e-mail and download only the relevant ones?

There are various freeware and shareware tools available that allow you to preview e-mail before downloading them from the server, even from POP3 servers. You can see the sender, recipients, subject and time stamps—these are usually enough to determine whether the message



Preview e-mail before downloading

is important or not. Magic Mail Monitor (www.geocities.com/SiliconValley/Vista/2576/magic.html) is a free tool that can handle multiple e-mail accounts and check them at regular intervals. It sits in the system tray and can optionally display the entire message, too. From here itself, you can reply, send or delete the e-mail.

If your server supports it, you can use IMAP for the same functionality. By default, Outlook and Outlook Express download only headers for IMAP folders. You can preview each message, download the ones you want and delete the rest. You can use IMAP just for preview and have the same account configured for

POP3, so after previewing and deleting messages, the ones you need can be downloaded to your desktop.

Sometimes when I shutdown Windows, I get a message that someone's connected to my PC, but I have nothing shared. How do I make sure no one's hacking into my data?

If you have Windows 9x, you can check who's connected to your computer using the Net Watcher tool. To install it, open **Control Panel > Add/Remove Programs > Windows Setup**. Select **System Tools** and click **Details**. Check the box for **Net Watcher** and click **OK**. You can launch the program from **Start > Programs > Accessories > System Tools > Net Watcher**. It will display all open connections, shared folders and open files. If you want, you can also disconnect users from here.

For Windows 2000 and XP, right-click on **My Computer** and click **Manage**. This

will open the Microsoft Management Console (MMC) for Computer Management. Expand the **Shared Folders** item. Under **'Shares'**, you can see what folders are shared. **'Sessions'** will show currently connected users and **'Open Files'** displays files opened over the network. You can disconnect users or close open files.

These agreement documents are huge. It takes me so much time to go through them and most of it is fluff anyway.

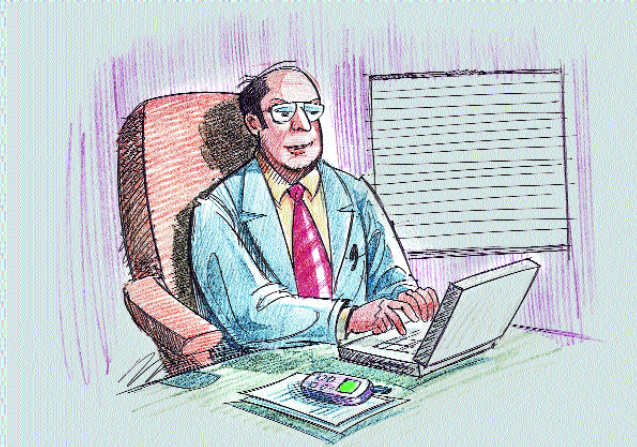
Word uses a powerful feature called **Outlines** for organising information. It takes just a slight extra effort and dili-



Organising information with styles

gence on your part when creating a document to organise the information correctly. Use **Styles** to mark out headings and subheadings in the document, in the hierarchy in which they are supposed to be (Heading1 corresponds to the first level, Heading2 to the second, and so on). Don't use or not use certain styles just because the font doesn't look good—you can change the appearance from **Format > Styles**.

If your document is created correctly, you can use

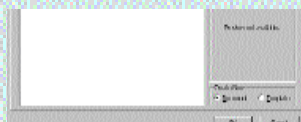


the Document Map (from the View menu) to browse through the sections and sub-sections. The items are grouped according to the hierarchy, and you can show or hide any of the levels (to see all sections at one glance, for example), making it extremely simple to navigate the document. Another advantage of using styles is that it makes reorganisation very simple. Switch to Outline View (**View > Outline**). Here, the entire document is displayed in a hierarchical form. Each group can be collapsed or expanded. You can click on the marker next to the heading or paragraph and drag it up, down, left or right. Pulling it up or down will move the entire group and its subgroups above or below other items, pulling it left or right will promote or demote the group. For a quick glance at the sections, click the Show First Line Only icon on the toolbar. This will display only the first line of every paragraph, again making it extremely simple to navigate a document.

Another advantage of using these styles in your document is that it can be imported directly into PowerPoint to make a presentation.

❗ Oops! This logo on the letterhead is for the wrong department. Now I'll have to print all the copies again.

You can avoid mix-ups and ensure consistency for all office memos by using templates. It is extremely



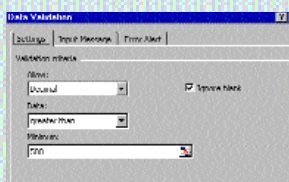
Templates ensure consistency

simple to create and use them. Open any existing document, delete all the matter except the items you want to repeat across all memos (logos, headers, footers, etc) and click **File > Save As** and choose Document Template from the 'Save as type' list. Apart from repeating items, templates also maintain styles, so you can ensure consistency in the fonts, headings, etc. Create a template for every kind of document you want to maintain and every time you want to create a new document, click **File > New** and choose which one you want to use. You can even replace the New icon on the toolbar with the one from **File > New**.

❗ We dispatch several hundred units across 20 regions. It takes me half a day every week to decide on the correct distribution plan and to make reports for region-wise break-ups.

Excel can be very useful for small-time inventory tracking. Plus, you don't need to know too much about Excel to be able to use it—basic inventory tracking simply involves addition, subtraction, multiplication and division. As a one-time exercise, you can make a worksheet that has all the functions

defined. You can probably use one sheet to keep a tab on all products. Thus, if you have all the products listed in one column, the total number of products in another column and the regions across a row, all you have to do is punch in the right numbers in the right cells. If you want an estimate of how many pieces of each to send to each region, just fill in the cells with the percentage of products you send to that region from the total number of products (e.g., =B3*12%) and every time the total number of products changes,



Automatic validation in Excel

you will automatically get the new estimate.

When filling up the sheet, if the number of products exceed the total number, or if a particular region is receiving very few products, you can have Excel warn you about it by using conditional formatting. Select the cells for which you want the warnings, click **Format > Conditional Formatting** and select 'Cell Value Is' in the first drop down, less than in the second drop down and enter the threshold value in the text area. Click the Format button to set the formatting. You can add up to three such conditions. If

you simply want to highlight negative numbers, open **Format > Cells**, under the Number tab set Category to Number and choose a style for negative numbers.

Again, rather than simply formatting such discrepancies, you can have Excel throw up an error message. Click **Data > Validation** and choose 'Allow Decimal with data greater than' and enter the minimum value the cell should have. Under the Error Alert tab, enter an error message to be displayed every time the data does not match the criteria.

Creating reports and graphs from this data is a breeze. Just click the Chart Wizard icon on the toolbar and click through the screens. You can link the data from Excel into Word too, say for creating vouchers for the products that are being sent to every region, by using Word's Mail Merge feature.

❗ The directory is in a Word file, but they haven't even used tables. How do I copy just the names of all the people at one go?

You can select a column of text out from a chunk in Word, just as in Acrobat Reader. Press [Alt] while dragging a selection around the text that you want to copy and only that part will be copied. This is extremely useful for picking out information from documents where items have been separated by a number of spaces or tabs. **■**

TOP GUNS

Trinity: "What do you need, besides a miracle?"

Neo: "Guns, lots of guns"

—The Matrix

A tribute to the best FPS weapons of all times

This quote sums up the foundation that FPS' are built on. To the layman, an FPS is just another mindless shooting game, but give an FPS gamer an elaborate set of guns to paint

ducking, covering and being a complete wimp, that you get the tantalising pay-back. Those big guns with enough recoil to send you rolling backwards from your chair—guns that change your posture from a cowering camper to a stand-and-deliver agent of death!

Here's a stellar list of the top 10 guns that have etched great gaming moments in



the walls with, and you'll make even the most jaded gamer delirious with glee. FPS' aren't played for their compelling storyline, you know!

Game developers are aware of this and manipulate the knowledge with sadistic pleasure—ever notice how you start the game with a lousy pistol that has all the effectiveness of a bent fork? It's only after you've been through the early levels,

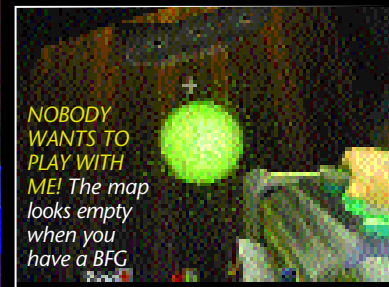
blood. But before we begin, come on backstage to see the rigorous test process these guns were put through to make it to the list. It involved hours of intense research that brought out the compassion in our editorial team. They 'crunched' their respective deadlines and even fought over who would put in late hours playing every FPS released over the past few years, benchmarking every weapon. Then followed a pro-con analysis, fierce intellectual debates and upper class rivalry over which gun rules. Finally, a consensus was reached and a comprehensive list of the top 10 guns was made.

SRI RAM SHARMA

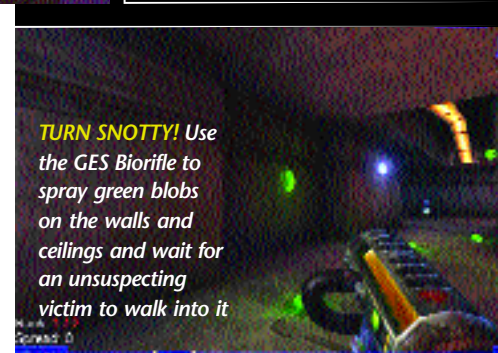
from a ledge and watch them chew through your enemies like landborne piranhas



USE THE FORCE LUKE: Or the LightSaber for that matter



NOBODY WANTS TO PLAY WITH ME! The map looks empty when you have a BFG



TURN SNOTTY! Use the GES Biorifle to spray green blobs on the walls and ceilings and wait for an unsuspecting victim to walk into it

light and instantly impacts the target. It can reduce 100 health points per shot. Mouse sensitivity plays a large part in the physics, so clean the mouse ball and use the smoothest surface possible. It takes interminably long to recharge, but it's a one-shot kill weapon that can quickly turn the tide in your favour.

10 HALF-LIFE THE SNARK GUN

Ammo Type: Snarks ■ **Damage:** Low/Medium ■ **Rate of Fire:** 2.5 rounds per second ■ **Clip Size:** 15 rounds ■ **Maximum Ammo Capacity:** 15

Snarks are the small, fast and vicious alien enemies in *Half-Life*, but turn baby Snarks against your enemies and you have one of the most amusing and sadistic weapons of all time. You can pick them up from their nest while they're sleeping and turn them against the enemies. As soon as you press the trigger, the Snarks jump off the gun and head straight for the nearest enemy. Beware though. If there's no enemy, they turn around and attack you! A bunch of Snarks can take down the toughest of enemies, not to mention annoy the hell out of them! At the end of their 15-second life, the Snarks explode into a puff of green goop, causing damage to everyone around. To ensure that they don't attack you, shoot them at the enemy from the top of a ledge or a crate.

9 UNREAL TOURNAMENT THE GES BIORIFLE

Ammo Type: Biosludge ■ **Damage:** Medium ■ **Rate of Fire:** 4 rounds per second ■ **Clip Size:** 25 rounds ■ **Maximum Ammo Capacity:** 100

Also known as the Snot or the Goop gun, think of the GES Biorifle as a mine-laying weapon. It fires toxic blobs of slime that hurt on direct impact. If fired at walls or the floor, it stays there for about 4 seconds and then explodes. You can cover a whole area with this goop to build a barrier or trap to hold back attackers chasing you. If one blob hits another, both explode instantly and so do all the other blobs close to them. You can use this to create a chain reaction: lay a line of blobs then let the last one explode. Use the

alternate fire to load one big blob. If it hits directly, it's a one-shot killer. You can load the gun and run around with it for as long as you want! In water, the slime floats on the surface, so if you know that an opponent is underwater, you can cover the surface where you expect him to get out of the water. Just be careful not to run into the slime.

8 JEDI KNIGHT II LIGHTSABER

Ammo Type: Melee weapon ■ **Damage:** Medium/High ■ **Rate of Fire:** NA ■ **Clip Size:** NA ■ **Maximum Ammo Capacity:** Unlimited

Before you protest that the LightSaber is a sword, hear us out. This is the coolest weapon ever implemented in an FPS and is certainly the most powerful weapon in *Jedi Knight II*. You'll rarely need to use any other weapon after you've obtained this one—it makes a Jedi a Jedi Master. You can use the LightSaber to deflect blaster fire and reciprocate with swings that take out most enemies on contact. The secondary attack, the ultra cool LightSaber Throw, can be used to destroy multiple enemies at short or medium range. With a three-tiered combat style, each with its special moves, the LightSaber brings special moves and combos to the genre.

7 QUAKE III ARENA RAIL GUN

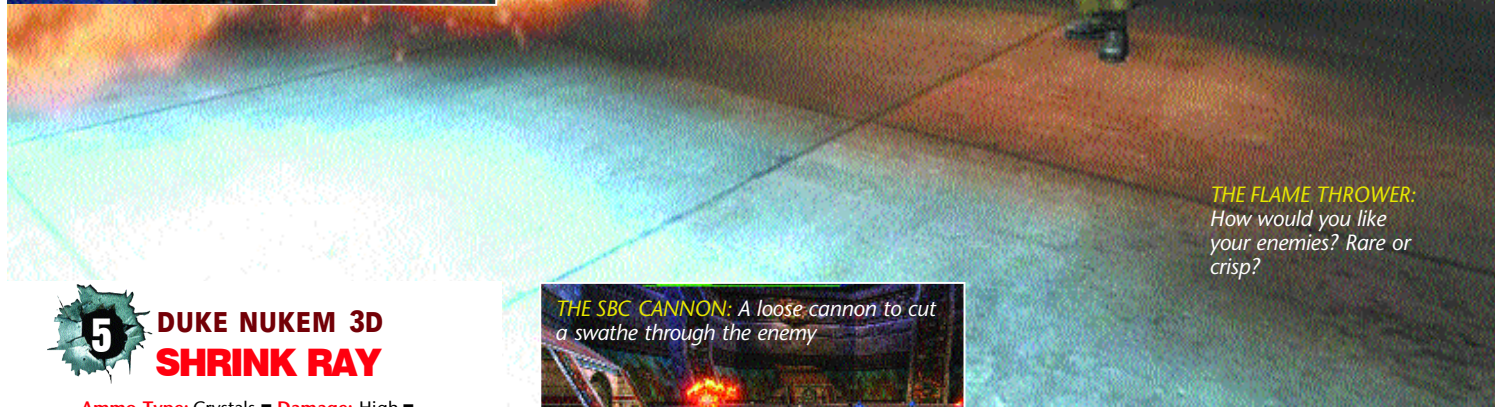
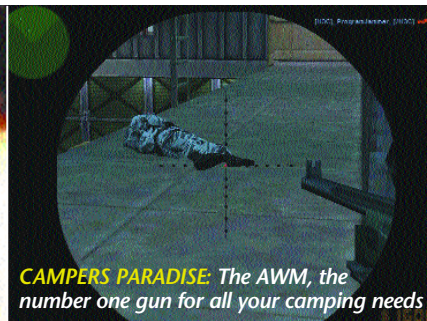
Ammo Type: Uranium slugs ■ **Damage:** High ■ **Rate of Fire:** Once per 2 seconds ■ **Clip Size:** 10 rounds ■ **Maximum Ammo Capacity:** 200

One of the most popular weapons in *Quake III*, it's the tool of choice for campers and LPBs (Low Ping B*****). The Rail gun is the most difficult weapon to master, but also the weapon of domination. It produces one thin, powerful beam that travels at the speed of

6 QUAKE II BFG 10K

Ammo Type: Energy cells ■ **Damage:** High ■ **Rate of Fire:** 1 second ■ **Clip Size:** 4 rounds ■ **Maximum Ammo Capacity:** 200

Inspired by *DOOM*, BFG stands for the Big, Fu... err, Freakin' Gun. Simply fire the BFG into a small room of unsuspecting enemies and change the colour of the map. It takes a long time to warm up and even longer to reload, but the energy ball it fires will vaporise everything in its path. The BFG does damage in three intricate stages. The first level of damage involves the impact and radius effect where the energy ball causes a blast. In the second stage, the energy ball shoots out laser beams, burning enemies who are close to it. The third level of damage is the most devastating—it affects anyone in the line of sight. Use the BFG in crowded areas to maximise its effect. With Quad Damage, you are talking World War III here!



DUKE NUKEM 3D SHRINK RAY

Ammo Type: Crystals ■ **Damage:** High ■
Rate of Fire: 2.5 rounds per second ■ **Clip Size:** 5
■ **Maximum Ammo Capacity:** 50

We put this one in just for the laughs! After a healthy dose of the big bad weapons, we have for you the Shrink Ray. No prizes for guessing what this gun does. This slick weapon shrinks your enemies to pint-sized Lilliputians for several seconds, during which time Duke can play Godzilla in the city! Can anything be more gratifying than turning a meddlesome opponent into Tom Thumb and squishing him with your boot?!



COUNTER-STRIKE ARCTIC WARFARE POLICE MODEL

Ammo Type: 0.338 calibre bullets ■ **Damage:** High ■ **Rate of Fire:** 0.89 rounds per second
Clip Size: 10 ■ **Maximum Ammo Capacity:** 30

Imagine camping behind a wall, with just your sniper scope peeking out, softly chanting "Come to daddy baby...come on you whiny kid... good boy" BANG!...and you have a new trophy for the wall! Until recently, just one shot from the Arctic Warfare Police model (AWP) anywhere on your body, and you were singing with the angels. Subsequently, the AWP was toned down a little—now if you get shot, say in the foot, you don't die immediately; but it leaves you reeling and weak.

The feared Arctic Warfare Magnum (AWM) dominates maps with its double zoom capability and menacing sound. This 0.338 calibre bullet can rip through three enemies standing in a single line. An over-powered sniper rifle such as the AWM can



be quite a menace in the right hands. It's not without its downside though. It's heavy and cumbersome to run around, manoeuvre or turn with. Use the AWP from a far off stationary position and aim at areas you know the enemy is going to pass through. Strafing while reloading is also a good strategy.



UNREAL TOURNAMENT REDEEMER

Ammo Type: Thermonuclear device ■ **Damage:** High ■ **Rate of Fire:** One shot ■ **Clip Size:** NA ■
Maximum Ammo Capacity: 1

By far the most powerful device in *Unreal Tournament*, the Redeemer can pulverise anything close to it, no matter how well protected and armoured it is. According to the game guide, the Redeemer is a small thermonuclear device that fires a very large and slow-moving nuclear missile that explodes upon impact. In secondary mode, it's like a reconnaissance plane—you can fly around the map for as long as you like, until you find the right place to blow up.

It does have a few downsides, though. For instance, you'll surely kill yourself unless you stay quite far away, and it can only be shot once. Not to mention that it's a very precious commodity. If you pick up a Redeemer, use it wisely.



RETURN TO CASTLE WOLFENSTEIN FLAME THROWER


Ammo Type: Fuel cells ■ **Damage:** High ■ **Rate of Fire:** Constant ■ **Clip Size:** 200 units of Napalm ■ **Maximum Ammo Capacity:** 200

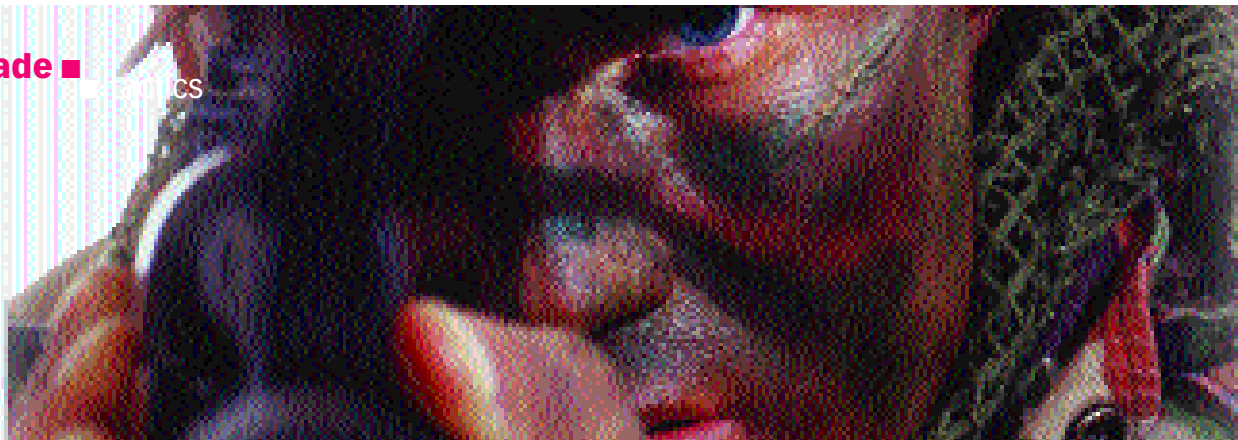
If arson is in your blood, this is one weapon that is bound to appeal to your fire-happy genes! Using Napalm fuel cells, this one gives you the capability to play Fire-God. You can direct it at a hoard of undead soldiers and watch them spin around the place in a confused stupor while the room fills with their burning fumes! The Flamethrower spews long squirts of liquid flames that set enemies on fire and cook them to a crisp. *Return to Castle Wolfenstein* just wouldn't be the same without it.



SERIOUS SAM SBC CANNON

Ammo Type: Uranium-filled cannon balls ■ **Damage:** High ■ **Rate of Fire:** Variable ■ **Clip Size:** 4 ■ **Maximum Ammo Capacity:** 4

No other weapon is worth as much anticipation or joy as the SBC Cannon. It's bigger than the BFG and shoots uranium-powered cannon balls that roll along, leaving a trail of destruction. Rolling cannon balls through swarms of enemies is a lot like bowling with human pins! Hurl it from the top of a valley, and watch the ball cut a neat hole through an invading army. The ball bounces around erratically until it finally stops and explodes in a big nuclear explosion. Reserve this one for your largest and most powerful enemy; you'll need it! 



The latest serving from Bohemia Interactive—resistance is futile!

Operation *Flashpoint: Resistance* expands the *Flashpoint* universe and introduces fans to a spanking new island with good graphics and excellent gameplay. You are cast as Victor Troska, an ex-Special Forces soldier, living an idyllic life on the island of Nogova, till a Soviet force invades the island and destroys Victor's dreams. The game has been critically acclaimed as an excellent war simulation—the player will find himself pitted against tanks,

dog-fighting with helicopters and airplanes, and ducking for dear life amidst war-strewn locales.

What they forgot to mention in the *Art of War*

This isn't a run-of-the-mill FPS. To win, you need the right mix of skill and tactics.

Safety in numbers: Stay in formation; this is not a solo game. Cover your teammates even as they provide cover for you.

Dog fights: If you



KNOWLEDGE IS POWER: Use the map to send in scouts and sorties to evaluate the lay of the territory and the enemy positions

More than Skills

Hold [Left Shift] and press [Keypad Minus]. Release the keys. Type one of the following codes to activate the corresponding cheat function.

iwilbetheone: God mode

savegame: Saves the current game

campaign: Unlocks all the missions. To be used at the Main Menu.

endmission: Ends the current mission

topography: Shows the elevations on the map. To be used at the Main Menu.


are caught in a dogfight with an attack helicopter, remember that the chopper is much more manoeuvrable than your fixed airplane. Use your fighter's engine to an advantage and make wide angle attacks from different angles.

Cover your flanks: Use the environment to your advantage—the bushes that litter a map can render you temporarily invisible to your enemies. Use the trees and the buildings as an effective blockade against the hostile fire.

Don't stop now: Keep moving. If you have been spotted, hold down the [Shift] key and keep bobbing and weaving between trees and houses. This way you become a hard-to-hit target and your chances of survival increase manifold.

TLC: Use the medic and use him often—remember that your aim gets affected if you have been hurt. If you are in charge of an entire platoon, get your buddies healed in a similar manner.

Recycle: Make sure that your teammates take useful weapons off fallen foes. To do this, highlight your buddy, press [7] to go to the action menu and choose the gun that you want him to take.

Travel in style: Use the various in-game vehicles—the light units such as the jeeps are a great way to get around the map, albeit with little protection. But the tanks! Use them to hammer in the point that you are not to be messed with. 

AHMED SHAIKH

Tools of the Trade

Carl Gustav Launcher

This rocket launcher uses highly explosive ammunition, suitable against armoured and unarmoured targets. Almost recoilless, it is equipped with a modern targeting system.

Caliber: 84 mm

Muzzle velocity: 300 ms

Effective range: 1300 m

FIM92A 'Stinger' AA Missile

The Stinger is used by the US Army as a short-range defence against flying units. It offers effective protection against airplanes, helicopters, unmanned aerial vehicles and even cruise missiles.

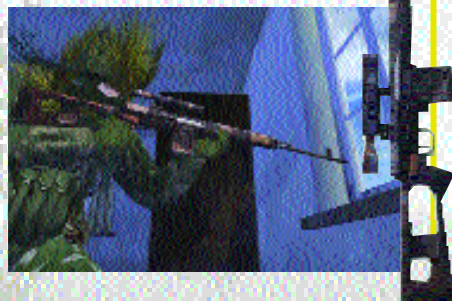
Caliber: 91.4 mm

Muzzle velocity: Mach 2

Effective range: 8000 m

Dragunov Sniper Rifle

Replacing the Svt-40, this one was conceived by the Russians as a sniper rifle. Apart from the ordinary



cartridges, it can also use devastatingly effective incendiary bullets. An optical sight enables you to conduct night firing at infrared sources.

Caliber: 762x54 mm

Muzzle velocity: 830 ms

Effective range: 3800 m





EA SPORTS CRICKET 2002

Stroke Play

Cricket 2002 is a complex, balanced, and fun game. Unlike many cheap sports sims that don't get licences from Cricket boards, Electronic Arts (EA), the publishers of the game, has all the official licenses to the International teams. You'll find features by the truckload—player editors, high-level character detail, TV-style gameplay, multiple camera views (stump camera and the helmet camera), and great sound.

The players look quite like their real-life counterparts and character animation is rendered using motion capture, making the movements very realistic. After every ball, there's a replay from multiple camera views and it is very satisfying to see a ball being knocked out from the stump camera.



BOWLED: *Cricket 2002* takes TV style presentation to a new level

Fans of the game will love to pick on all the flaws of this game and *Cricket 2002* does have a few. The scoring rate is too quick against weaker sides and the LBW

decisions often seem unfair. The gameplay is not radically different, though they've dropped the tru-spin and tru-bat system from their earlier version for a simplistic gameplay mechanism. It is a little complicated in the beginning, especially if you are using a keyboard—you'll find your entire team wiped out in the first three overs itself.

The crowd sounds add to the electric atmosphere and Richie Benaud and Jim Maxwell give a realistic commentary.

While this is a fairly solid game, it still falls short of the pedigree of EA's sports titles. It doesn't quite measure up to the quality of the NBA and FIFA franchises. While it falls short of being legendary, this is still the best cricket game out there.

Minimum System Requirements: 300 MHz processor, 64 MB RAM, 8 MB Direct3D-compatible graphics card

Genre: Sports ■ **Developer:** EA Sports ■ **Distributor:** Gayatri Impex ■ **Phone:** 022-3381443 **Web site:** www.easportscricket.com ■ **Price:** Rs 999

■ **Rating:** ★★★★★

FOUNDATION FLASH MX

All in a Flash

Want to learn the world's best vector animation tool for the Internet without spending thousands of rupees? Then get *Foundation Flash MX*. The book covers all the subjects related to optimisation of the products, basics of dynamic Web site design and structure.

It's aimed at novices and intermediate level users and begins with a brief description of Macromedia Flash MX and how it is different from the earlier versions. It gives details of all the objects and tools used for authoring, and guides you through the new user interface. The book also has some exercises to give you precision with its drawing



and bezier tools. You can acquaint yourself with the intermediate and higher level of Action Scripting used for Web applications and game development by reading the fundamental concepts of object-oriented design. Also found are detailed insights on creating music, how sound works and the things to keep in mind while creating music for Web sites and other multimedia projects. It also contains exercises for manipulating video files and many easy-to-use sample scripts. *Foundation Flash MX* gives comprehensive and knowledgeable insights on every aspect of Flash that a user would expect to come across.

Publisher: Shroff Publishers and Distributors Pvt Ltd ■ **Contact:** Computer BookShop ■ **Phone:** 022-2317922/23/24 **Fax:** 022-2623551

■ **Price:** Rs 400 ■ **Rating:** ★★★★★

MOTOGP: ULTIMATE RACING TECHNOLOGY

Of Burning Rubber and Hairpin Curves

Developed originally for the Xbox, PS2, and the Game Boy Advance, the PC version of *MotoGP: Ultimate Racing Technology* is made for the thrill seeking. Racers such as Kenny Roberts and Valentino Rossi battle it out with some of the world's fastest machines such as Suzuki, Yamaha and Honda.

While beginners will find it fairly easy to get the hang of their bikes, honing your skills in the finer aspects of racing will take some practice. That's where the various game modes such as Quick Race, Time Trials, Training, Arcade Championship and Grand Prix series come into play.

You can either play as one of the many professional racers or create your own rider identity. You are given 10 points, which are distributed among four skill categories: Cornering, Braking, Top speed and Acceleration. Each skill category has 10 training missions and each mission gives you one skill point. The missions gradually increase in difficulty



and each requires a different skill set. While Quick Race and Time Trials stress on setting the best lap times, Arcade Championship gives you points based on your performance in the race. The Grand Prix series mode lets you take part in the practice and qualifying rounds on each track before racing and your point total at the end of the series determines your standing in the tournament.

Visually, this game is simply delightful. Details such as the shadows on certain parts of the tracks that are lined with trees while racing with the 'Sunny' setting turned on, and the sound of thunder and the flash of lightning while racing on a rainy day, add to the replay value of the game.

What you will miss is the actual realism involved in Grand Prix racing—running off the track as you try to manoeuvre a sharp curve only decreases the bike's speed. The game also places you astride automatically when you take a spill, taking away from the realism of the crash. But even though this does make things a wee bit easy, getting through the tracks and making good time won't be so simple. All in all, this is one high octane racing game that should put the fire beneath you!

Minimum System Requirements: Pentium II 400 MHz, 64 MB RAM, 300 MB hard disk space, 3D accelerator card, CD-ROM drive, DirectX 8.x
Genre: Sport ■ **Developer:** Climax ■ **Distributor:** Milestone Interactive ■ **Phone:** 022-8381614 ■ **Web site:** <http://motogp.thq.de> ■ **Price:** Rs 799
■ **Rating:** ★★★★★

DIE HARD: NAKATOMI PLAZA

Not Worth Dying For

Die Hard: Nakatomi Plaza is another FPS based on a popular franchise, this time on a popular 1980s action film.

The game emulates the plot of the movie and puts you in the place of John McClane, a smart-talking New York cop who fights German terrorists to save his wife. The game features several original levels throughout the Plaza building. Instead of a small group of terrorists, like in the movie, you'll find one at every nook and cranny. Since the entire game is set at the Nakatomi Plaza building, the environments are repetitive, with offices, offices and some more offices. This makes the environment claustrophobic and the gameplay uninteresting.



It does feature some well-scripted missions where you have to defuse bombs, cut wires and save civilians. The game's winning points are its realistic environments and impressive in-game cinematics. The offices look plush, with good

attention to detail, but there's not much to break the monotony. The Lithtech engine (which was used for *No One Lives Forever*) has been used here, but not to the best effect. The weapon range is limited—there's only a standard machine gun, an M16, a 9 mm pistol, a heavy machine gun and a sniper rifle. The AI is interesting, with the SWAT teams and the terrorists hiding and dodging you, but there's nothing out of the ordinary.

The game is a good first effort from Piranha Games—well rendered and executed. The cinematics and cut scenes give the intended Hollywood feel, but *Die Hard: Nakatomi Plaza* offers very little that a dozen other FPS' don't.

Minimum System Requirements: 400 MHz processor, 64 MB RAM, 16 MB Direct3D graphics card **Genre:** First Person Shooter
■ **Developer:** Piranha Games ■ **Distributor:** World Wide CD ROMs **Phone:** 022-5006661 ■ **Web site:** www.sierra.com/games/diehard/
■ **Price:** Rs 999 ■ **Rating:** ★★★★★

Twenty-one Guns

Digit will never be the same again without these heroes

Each month we share with you our experiences in bringing out your favourite technology magazine. Some of our behind-the-scenes activities are adventurous, some funny and some just involve a lot of hard work in overcoming unexpected hurdles. But never before have we faced a tragedy of this magnitude.

We got the news in the wee hours of Sunday, the 28th of July that five of our team members, Akhilesh Singh, Arup Ghosh and Sourav Ghosh from our Circulation and Logistics team, and C.M. Krishnan and Kiran Desai from our Accounts department had met with a fatal accident on the highway between Bhopal and Indore. They were on yet another road trip aimed at increasing the reach of Digit in several smaller towns and cities.

The news sent shock waves throughout the company and we still find it hard to believe that these five will not turn up one day, dusty from the road, with some more unbelievable tales of their intrepid adventures.

Akhilesh was a stalwart, one of the oldest members in the team. As head of the Circulation and Logistics team, he was responsible for ensuring that Digit reached every corner of India on time, come hailstorm or high water.

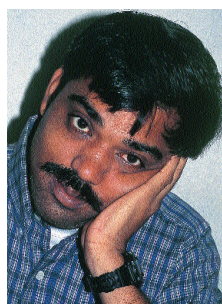


Akhilesh had strong personal ties with everybody he worked with and also with his trade partners, scattered across the country. Though a taskmaster at work, he was looked upon as an elder brother and mentor by many of the younger members of his team. Always ready to meet any challenge head-on, he had this innate knack of getting the impossible done. Also, no get-together was complete without him—his 'moon-walking-underwater-cum-belly-dance' routine used to be

the popular demand at each and every party.

Akhilesh leaves behind his grieving parents, an older brother and two older sisters. He was engaged to be married this November.

Arup was assistant manager, Circulation and Logistics. A true team player, he was level headed and dependable in



any situation, always willing to take up any challenge thrown at him. Arup joined us in December 1999 and was always ready to lend a helping hand to others, irrespective of whether

he was bogged down with his own work.

An ace rally driver, his passion for cars was rivalled only by his passion for cooking. In fact, he was the *de facto* cook at all office parties, where we would gather together and hold a huge cook-in under his expert guidance.

He is survived by his parents and an older sister.

Sourav was a very jovial person with a booming, infectious laugh. He joined the Logistics team in April 2001 as manager, magazine sales having previously worked with the Gawhati-based publication, *Anand Bazaar Patrika* and brought with him extensive knowledge and experience about magazine distribution in India.



Though he'd been with us for just over a year, he was regarded as an indispensable member of the team.

Just before the accident, Sourav had gone to Kolkata on leave and wasn't going to be on this particular trip. But he joined the rest of his team members on

his way back from Kolkata as his presence would make a big difference to their morale.

Sourav leaves behind a grieving wife and a three-year-old son.

Kiran was our manager, Accounts. His tolerance in handling even the most demanding situations lent a stabilising effect to the hectic working style of the



Accounts department. Always keeping a low profile, Kiran let his actions speak for themselves. Today, his expert financial systems help manage the accounts for the entire JS Group. As a

friend, he had always guided his fellow workers and stood by them during all their problems, whether professional or personal.

Kiran is survived by his mother, wife and a young daughter studying in Class 10.

Krishnan was a perfect foil to Kiran. His enthusiasm made the most difficult of tasks look easy. He was always the fun-loving guy who would release the tensions in the Accounts department. His second innings with the JS Group started when he joined as manager, Credit Control, and took over the entire credit



functions of Jasubhai Digital Media. The adept handling of our company's funds and cash flow was indeed a 'credit' to him.

Krishnan leaves behind a wife, a son studying in class 11 and a daughter studying in class 7.

As colleagues, friends and truly wonderful people, they will be sorely missed. ■

WHY DOGS DON'T USE COMPUTERS

10

Can't stick their heads out of Windows 95.

9

Fetch command not available on all platforms.

8

Too difficult to 'mark' every Web site they visit.

7

Can't help attacking the screen when they hear "You've Got Mail".

6

The fire hydrant icon is simply frustrating.

5

Involuntary tail wagging is a dead giveaway that they're browsing [www.pethouse.com](#) instead of working.

4

SmellU-SmellMe still in beta test.

3

SIT and STAY were hard enough, GREP and AWK are out of the question!

2

Butt-sniffing is more direct and less deceiving than online chat rooms.

1

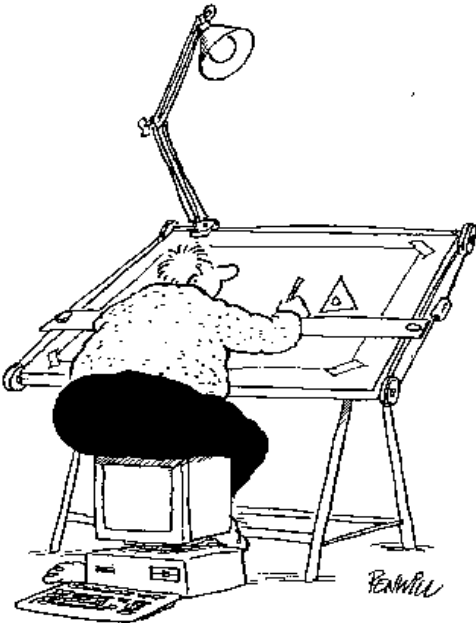
TrO{gO DsA[M,bN HyAqR4tDc TgrOo TgYPmE WelTyH P;AzWqS.

C++ in seven days



"You can't just punch in 'let there be light' without writing the code underlying the user interface functions."

Computer Aided Design?



And you thought it was all about AutoCAD? Think again!



The Geek in Black



“ f u cn rd ths, u cn gt a gd jb n cmptr prgrmmng ”
– Anonymous

The Earth on your hard disk

The3dStudio.com			
	Free 3D resources	Store links	
	Support forum	Books	My account
	Models	Plugins	Sign in
	Textures	Textures	
	Tutorials	Training	
		Site information	
		FAQs	Advertising
		Mailing list	Support us
		Submit resources	

Earth



Model Info
Name: Earth
Category: Space
Formats: MAX3 & 3DS
Author: Matt Anderson
Author URL: [http://www.the3dstudio.com/](#)

Download Earth

Your chance to bite back!

Highlight the lighter side of computing. Mail your contributions to: Backbyte Digit, Plot D-222/2, TTC Industrial Area, MIDC, Shirvane, Nerul, Navi Mumbai 400 706 or e-mail us at [backbyte@jasubhai.com](#)